PRESENTATION TO

Forestry of the Future
Govt. of Nova Scotia &
Forest Products Association of Nova Scotia

Halifax

Thoughts on Transforming the Forest Sector

Don Roberts, Vice-Chairman,
CIBC World Markets Inc.

December 11, 2012

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Appendices

Lumber Markets Will Tighten and Prices Will Escalate as Housing Starts Approach 1.4 Million in the Coming Cycle

- **Four reasons why 1.4 million U.S. housing starts is the new 2 million**
  - **Exports To Asia** (China) – 6 billion fbm in net exports in 2012 compared to 0.5 billion fbm in 2005
  - **BC's Mountain Pine Beetle Epidemic** – 4 billion fbm decline in lumber production from 2005 (15 billion to 11 billion fbm)
  - **Lower Allowable Cut In Ontario & Quebec** – lumber production in 2011 was 6 billion fbm from 12 billion fbm in 2004)
  - **Permanently Shut Capacity** – estimate 10 billion fbm permanent sawmill closures in North America since 2005

- **Bottom line?**
  - We have a **new off-shore source of demand, and the supply response to the N. America market is lower** than it was during the last cycle
  - **Both the secular (and cyclical) outlook for lumber looks promising** – despite experiencing the worst economic recession in over 70 years.
    - Critical outcome, since **lumber is arguably the cornerstone of a competitive forest sector** complex.
    - But
      - **Are you competitive within the lumber sector?**
      - **What are you going to do with the ~50% of the sawlog you don't make into lumber?**

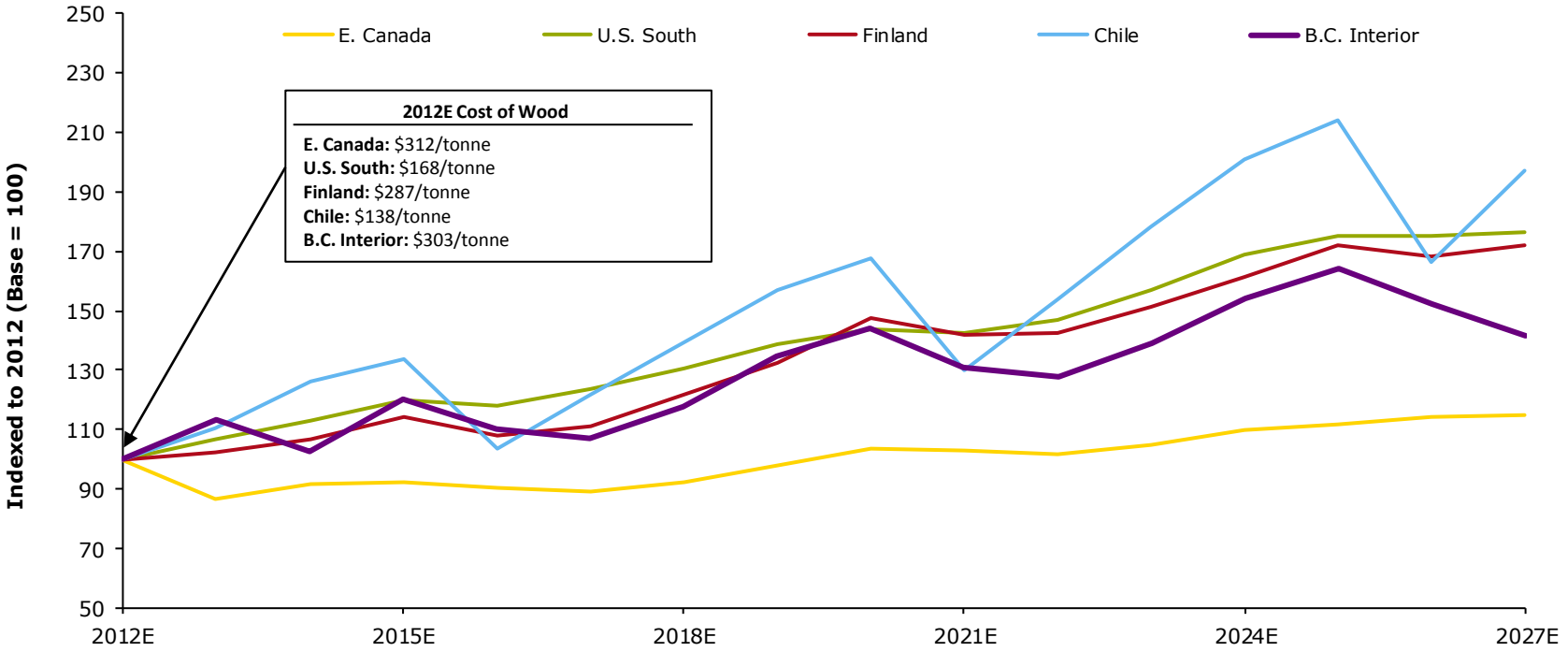
Source: CIBC Equity Research.

Wood is the single largest cost component in producing pulp.

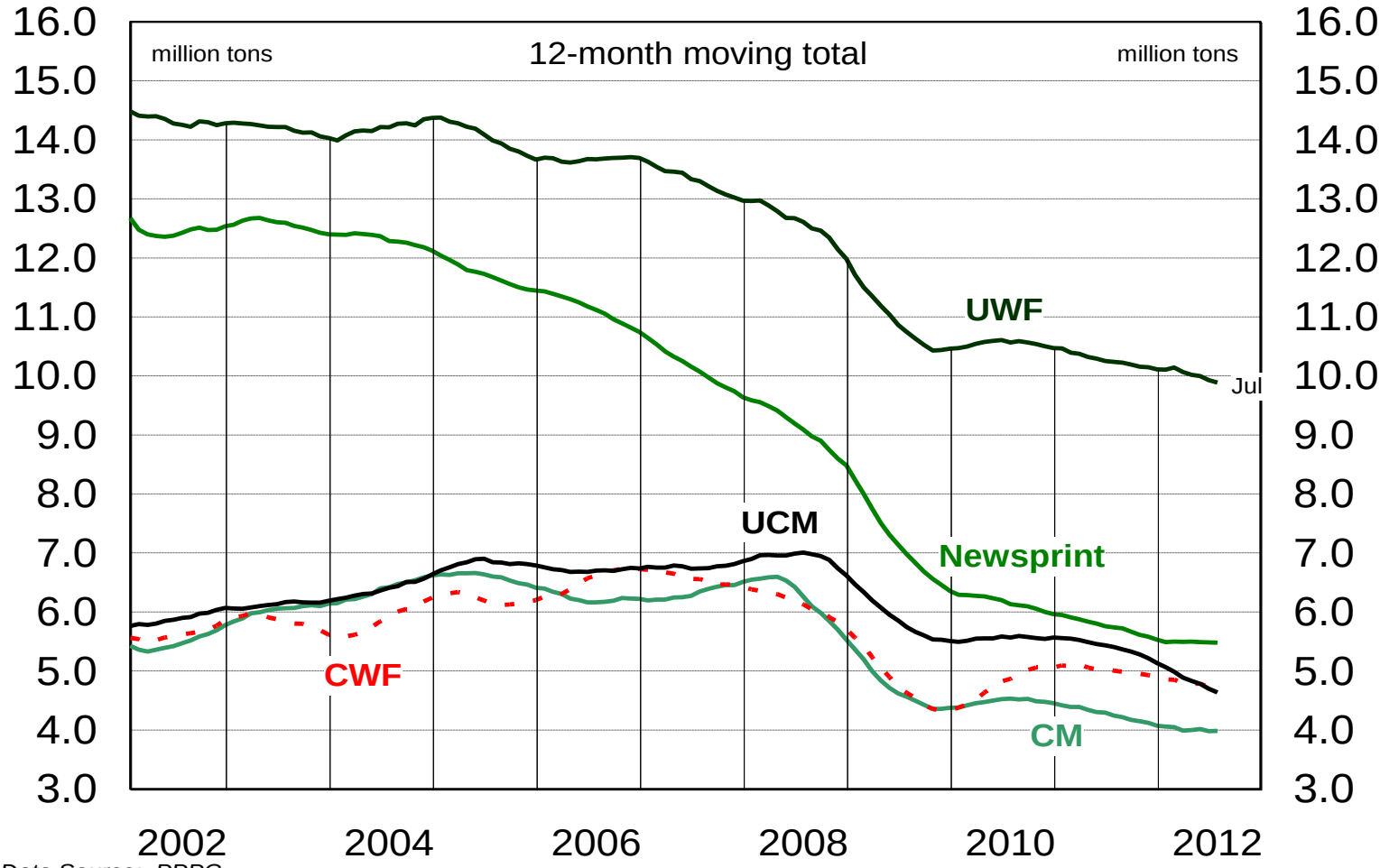
- The **good news** is that, in the future, the cost of softwood pulpwood is forecast to increase the least in Eastern Canada and the most in Chile and the southern U.S.

- The **bad news** is that the cost of wood to produce one tonne of softwood kraft pulp is currently the highest in Eastern Canada (and lowest in the southern U.S.).

Bleached Softwood Kraft Pulp – Cost of Wood



North American Paper Demand

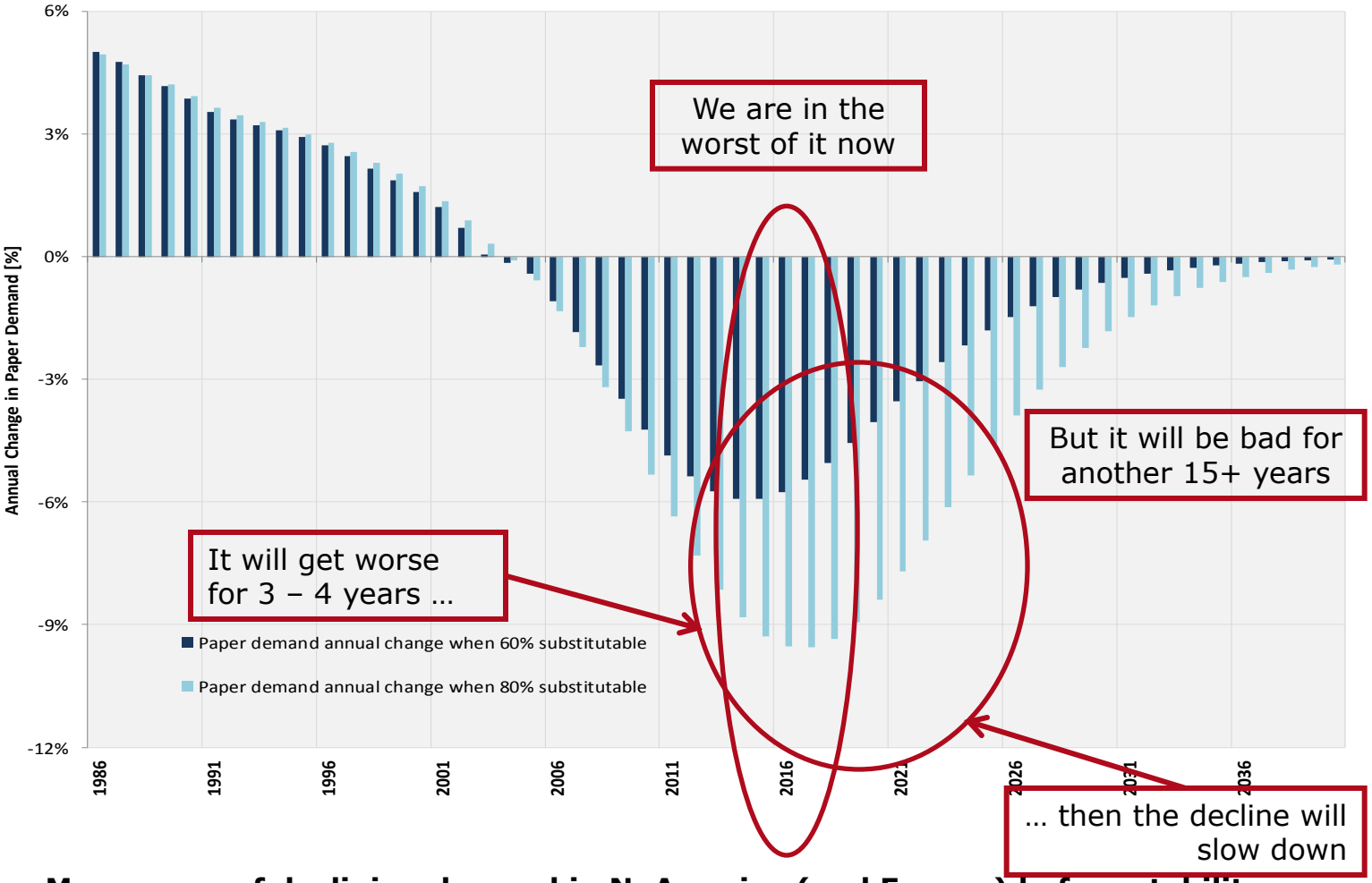


Data Source: PPPC

Just since 2005, N. American demand is down ~30% for Uncoated Woodfree and Mechanical Papers , ~40% for Coated Mechanical Paper, and 50%+ for Newsprint.....WE DO NEED TO TRANSFORM!

Source: ERA Forest Products Research

Annual Percent Change in Demand Due to E-media Substitution in North America

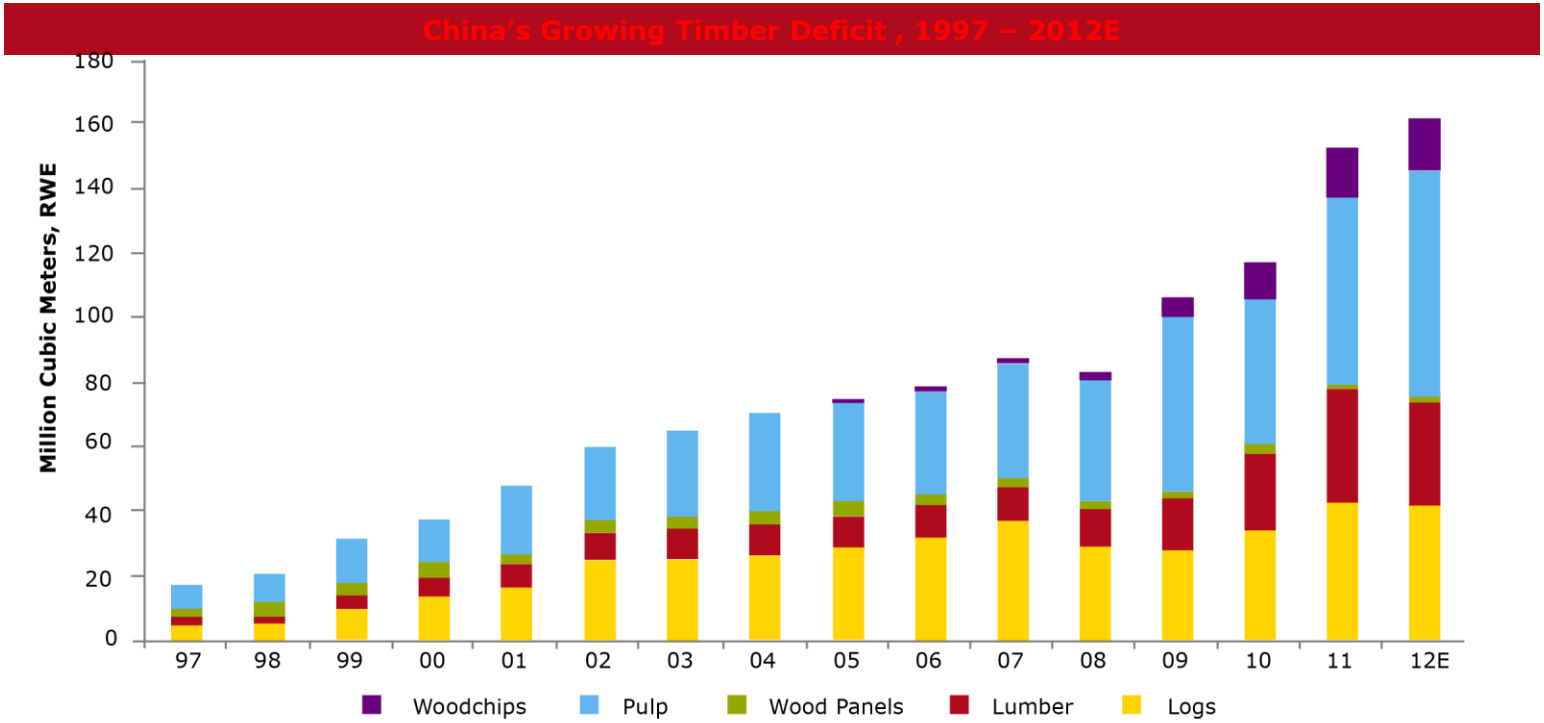


More years of declining demand in N. America (and Europe) before stability.

This outlook for recovered paper supply supports the decision to permanently close Minas Basin Pulp and Power Company Ltd., a producer of recycled paperboard products.

Source: Systems Thinking Europe, Oy

- On a positive note, China's timber deficit is currently over 160 million cubic meters (roundwood equivalent)
  - It will likely exceed 200 million cubic meters by 2015.
  - By comparison, Canada's national harvest in 2010 was only 142 million cubic meters
- The biggest share is in the form of wood pulp, then logs and lumber.
- Although it slowed last year, China's timber deficit grew at ~17% compounded annual growth rate from 1997-2011.



We expect a combination of the following three factors to increase the global demand for virgin wood fiber in the future.

1.Decline in the relative supply of recovered paper

2.Rise in Asia's wood fiber deficit;

3.Growth of the bio-energy/chemical sector.

This is good news for the owners of biomass.

……Now lets focus on the emerging Bio-economy.

Investing in the Bio-Economy is Now Mainstream

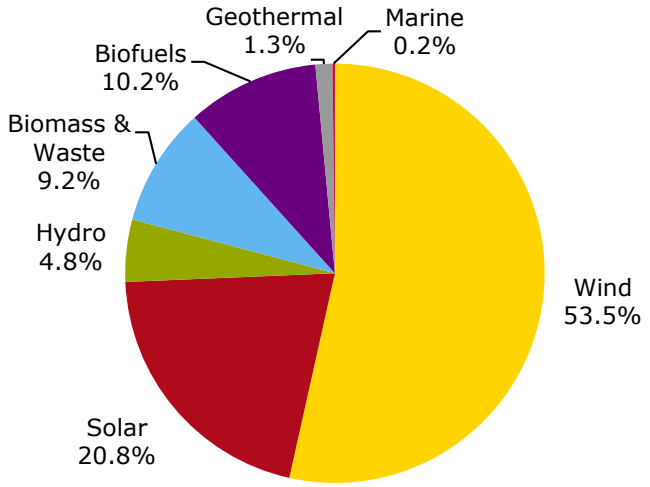
- Today, 30 of the Fortune 100 are invested in the production of biofuels and/or bio-based materials, or their distribution
  - BP, Shell, Valero, Dow, Dupont, Roquette, Coca-Cola…

- The Bio-economy has many segments:
  - Bio-electricity
  - Bio-transportation fuels
  - Bio-chemicals
  - Bio-materials

Renewable Energy Investment (2005-2012 Q3)

- Since 2005, roughly $20 billion has been invested in Renewable Energy projects in Canada, and over $830 billion at the global level.
- Despite its large forest products and agricultural sectors, investment in bio-energy projects has been relatively lower in Canada than at the global level (14% vs ~20%).
- Wind receives the bulk of the investments in most places, and especially in Canada.

Global Asset Financing in Clean Energy[1]
(2005 – 2012 Q3)



Canadian Asset Financing in Clean Energy[1]
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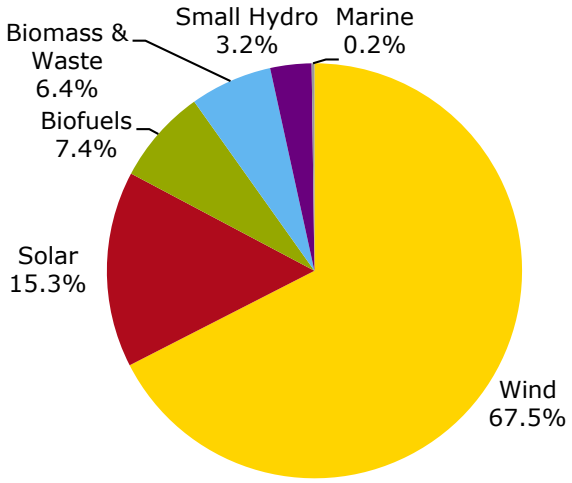
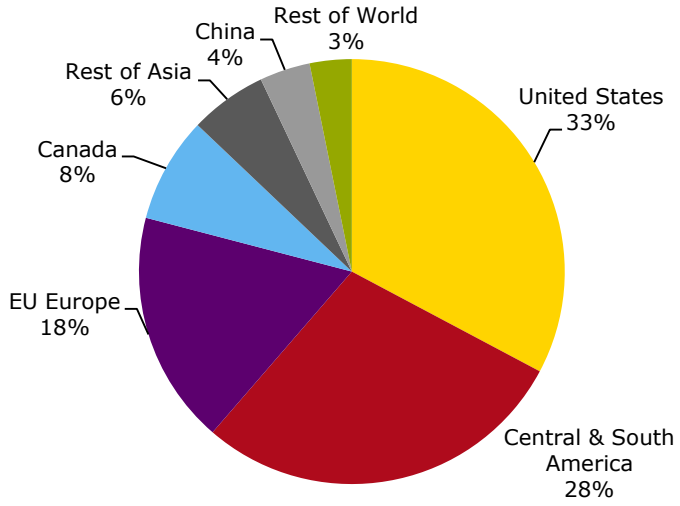


[1] Source: New Energy Finance. Total values include estimates for undisclosed deals.

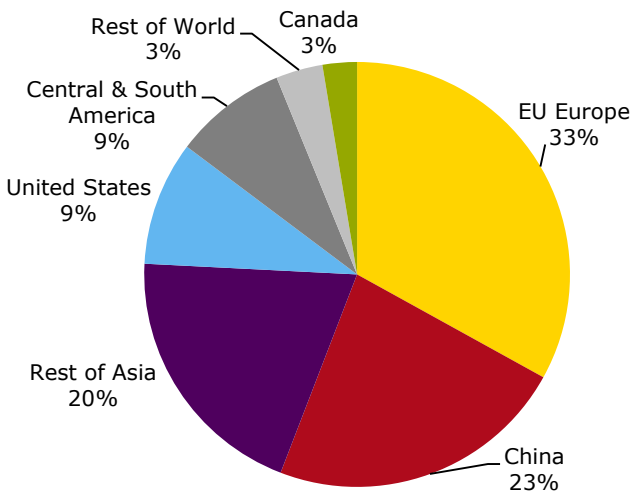
Global Bio-Energy Investments (2005-2012 Q3)

- Historically, the split between investments in the biofuels and biomass (power) segments have been roughly equal - ~$110 billion and ~$90 billion, respectively, since 2005.
- U.S. and Brazil have dominated the global investment in biofuels (liquid), almost all of which is either corn or sugar-based ethanol.
- Europe and China have dominated the investment in biomass-based (solid and gas) energy.
- Canada has played a much bigger role in biofuels (8%) than in biomass-based power (3%).

Biofuels



Biomass

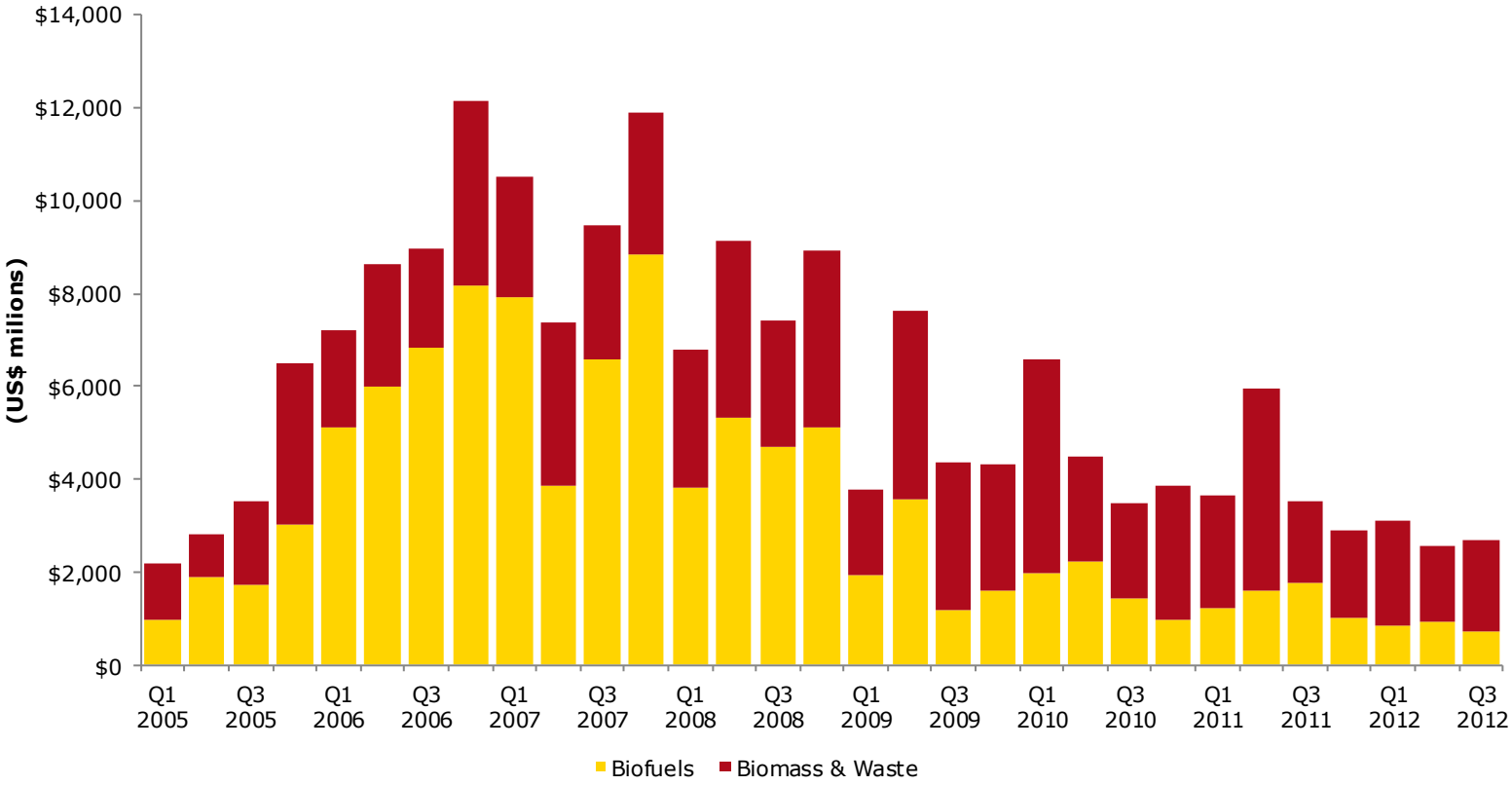


Source: Bloomberg New Energy Finance., CIBC World Markets Inc.

Global Bio-Energy Investment (Project Finance, Public Markets, VC/PE capital)

- After exceeding $28 billion in 2008, global investments in bio-energy have fallen to ~ $10 billion in 2012….down by almost two-thirds.
- Biofuels have historically accounted for the bulk of the global investment in bioenergy, but biomass-based energy has been much more important since 2009.
- Both trends are arguably negative in terms of value-added.

Global BioEnergy Investment (Q1/05 – Q3/12)

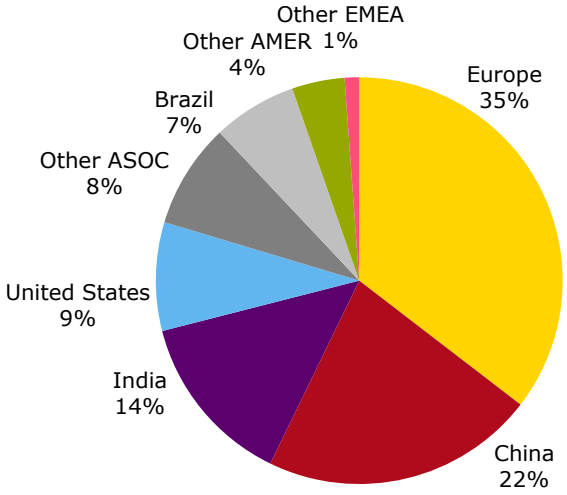


Source: Bloomberg New Energy Finance, CIBC World Markets Inc.

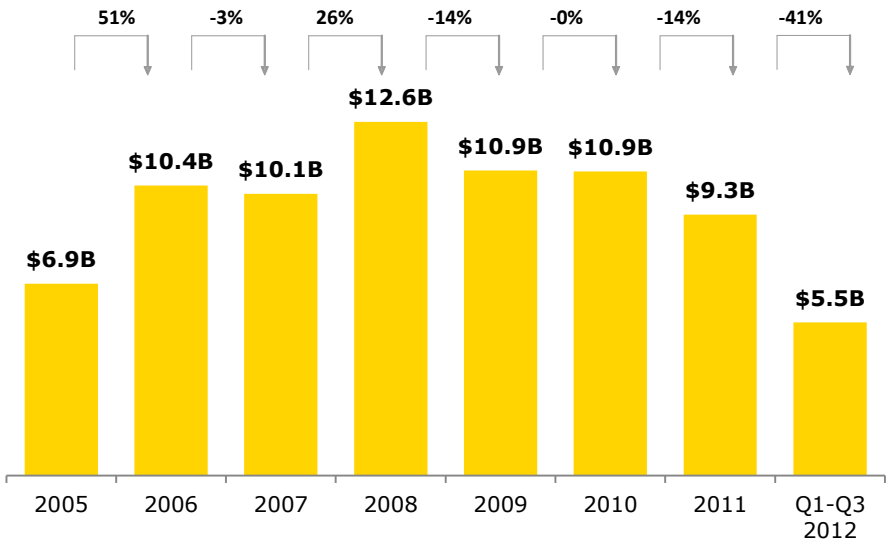
Global Investment in Biomass-based Power

- Europe is the leader, accounting for ~1/3 of global investments in Biomass-based power
  - EU expects to double biomass capacity by 2020 to ~26 GW (~$50 Billion)
- China is now targeting to increase biomass power from <4.5 GW in 2011 to 8 GW by 2015 and 18 GW by 2020 – more than triple over the next 10 years.
- If we believe the national targets, there will be upward pressure on the global price of biomass
- Despite the targets, global investments in energy plants using biomass (i.e., solids/gas) have steadily declined since 2008.

Global Asset Financing in Biomass Power
(2005 – 2012 Q3)



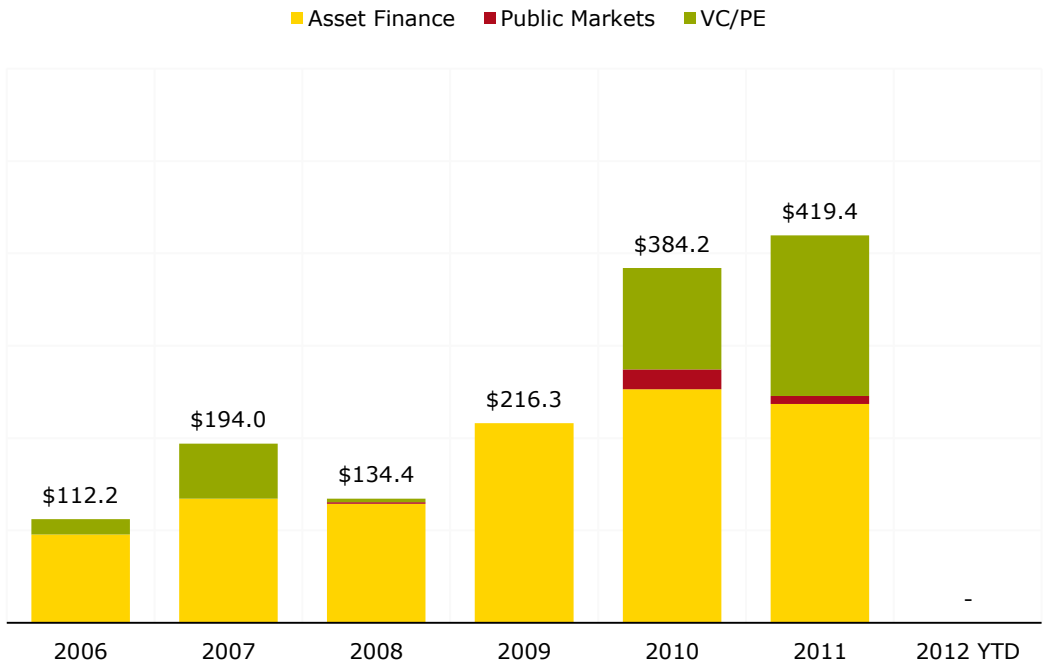
Cumulative Growth in Biomass Power Asset Financing
(US$)



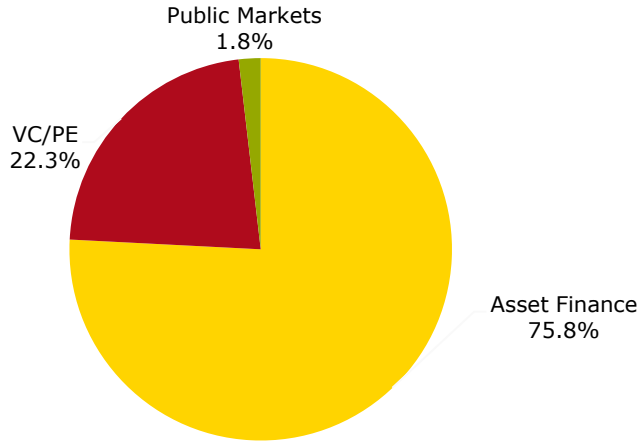
Source: Bloomberg New Energy Finance, CIBC World Markets Inc.

Canadian Investment in Biomass-based Power

Canadian Investment in Biomass Power, $ million *(2006 – 2012 Q3)*



Investment in Biomass Power *(2006-2012 Q3)*



- Canadian investment in Biomass-based power has fallen to essentially zero in 2012, after exceeding $400 million last year.

What Drives Investment in Bio-energy?

- **Four Key Variables:**

1. **Price of Fossil Fuels** – price signals vary (e.g., coal vs oil vs natural gas)
2. **Cost and Quality of the Resource** – typically 50%-70% of variable cost for bio-energy… location is important
3. **Efficiency of the Conversion Technology** – rapid changes in technologies
4. **Public Policy** – in many cases some public support is required

Low price of natural gas & policy uncertainty are the two biggest current impediments to investment in bio-energy.

Bio-Energy Policy

- Most bio-energy investments would not be undertaken without some form of government support.
- The EU, U.S. and China are all providing support to their domestic bio-energy sectors.
- However, due to increasingly tight government budget constraints, there is growing risk to direct financial support from the public
  - "Let there be no doubt that the first overwhelming priority of the government has to be to get the deficit down" – Chris Hulne, Energy and Climate Change Secretary (U.K.), December 2010

United States: Federal

- Stop-and-go subsidies (e.g., PTC, ITC) – expensive, but not necessarily effective given the uncertainty over longevity.

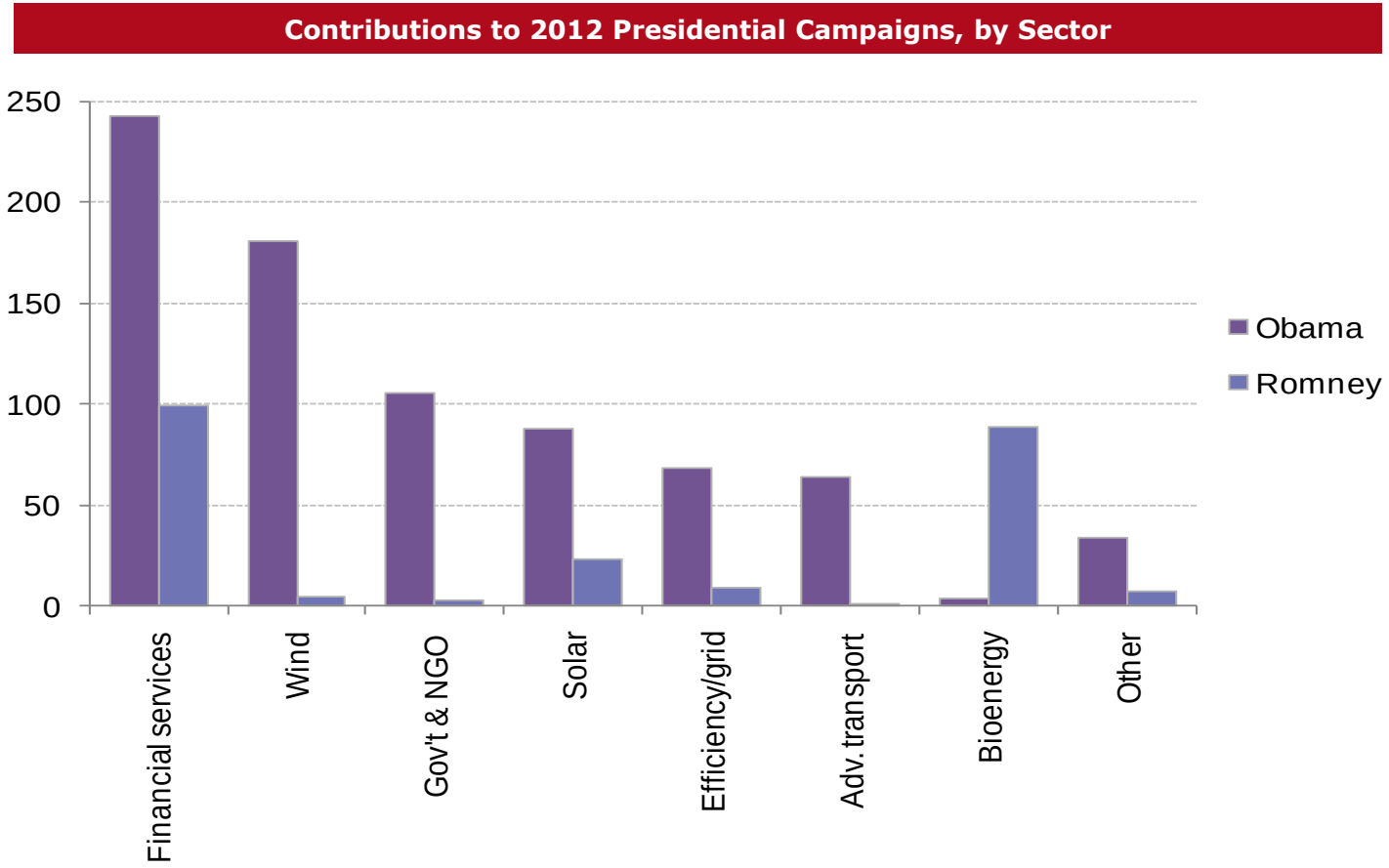
- Platitudes from the President
  - Called for new Clean Energy Standard (State of the Union Address, Jan 2011)
    - Raise clean electricity consumption from 40% to 80% by 2035
    - Includes renewables, nuclear, natural gas & clean coal
  - National Energy Policy – "Blueprint for A Secure Energy Future" (March 2011)
    - Cheap natural gas is a "game changer" – end of Environmental/Defense alliance?

- Need bi-partisan support for the national Clean Energy Standard and further financial assistance – Unlikely (except PTC for wind)

- Key implications of Obama's win?:
  - EPA remains under Democrat control – means the agency will continue to curb CO2 emissions from the power sector ;
  - Master Limited Partnership and Real Estate Investment Trust Structures likely to be made available to renewable energy developers – means the cost of capital for renewable projects will likely decrease;
  - RFS-2 would have likely have been kept anyway – enjoys some Republican support

Global Tour

- Bioenergy is the ONLY clean energy subsector which contributed more to the Romney than Obama campaigns
- Reflects why RFS2 is one of the very few clean energy initiatives to enjoy bi-partisan support.

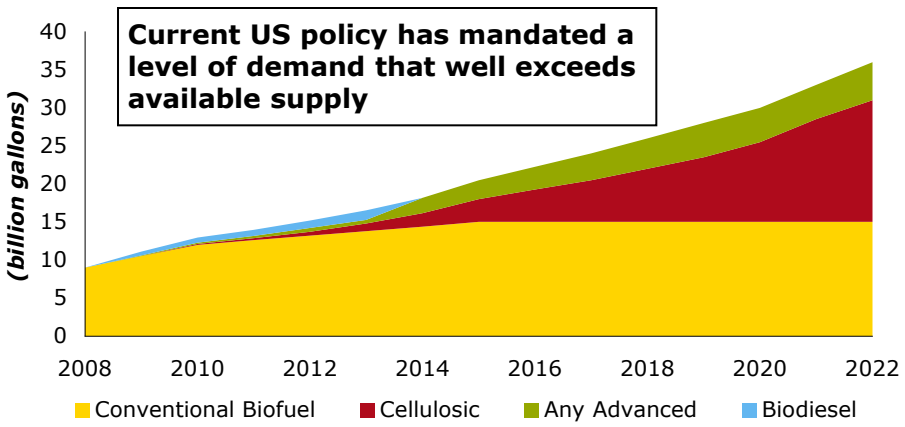


Sources: US Federal Elections Commission

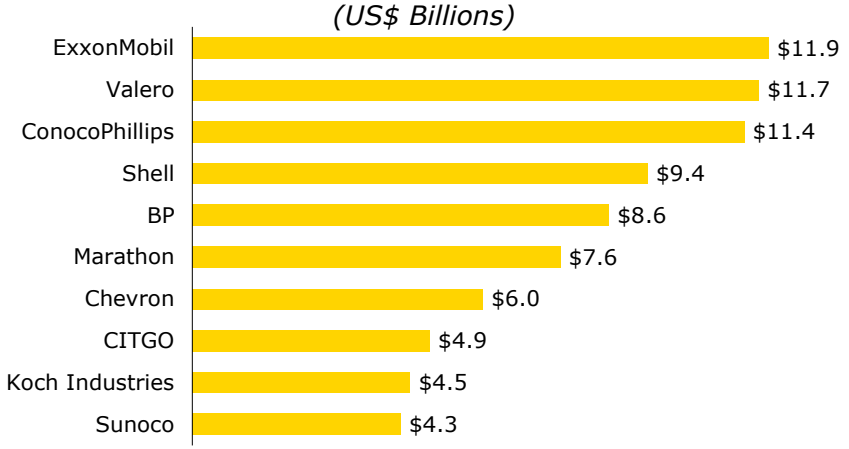
U.S. Government's Renewable Fuel Standard – 2 ("RFS2")

- **Objective is to stimulate the production of "next-generation bio-fuels"**
  - Specific technological pathways must be approved by the EPA
  - The feedstock must come from a renewable and sustainably managed resource
  - Requires 21 billion gallons of advanced bio-fuels by 2022
    - Up from <4 million gal in 2012
    - 2022 target must include at least 16 billion gal of advanced cellulosic bio-fuel
- **RFS2 creates a broad and sizable market** in the U.S. for cellulosic fuels with numerous motivated potential customers, but there is still some policy uncertainty
- **Bi-Partisan support**, but it still may be modified
  - Interim targets relaxed?
  - Cellulosic and Advanced pools combined?

RFS2 Mandate (in ethanol equivalence)



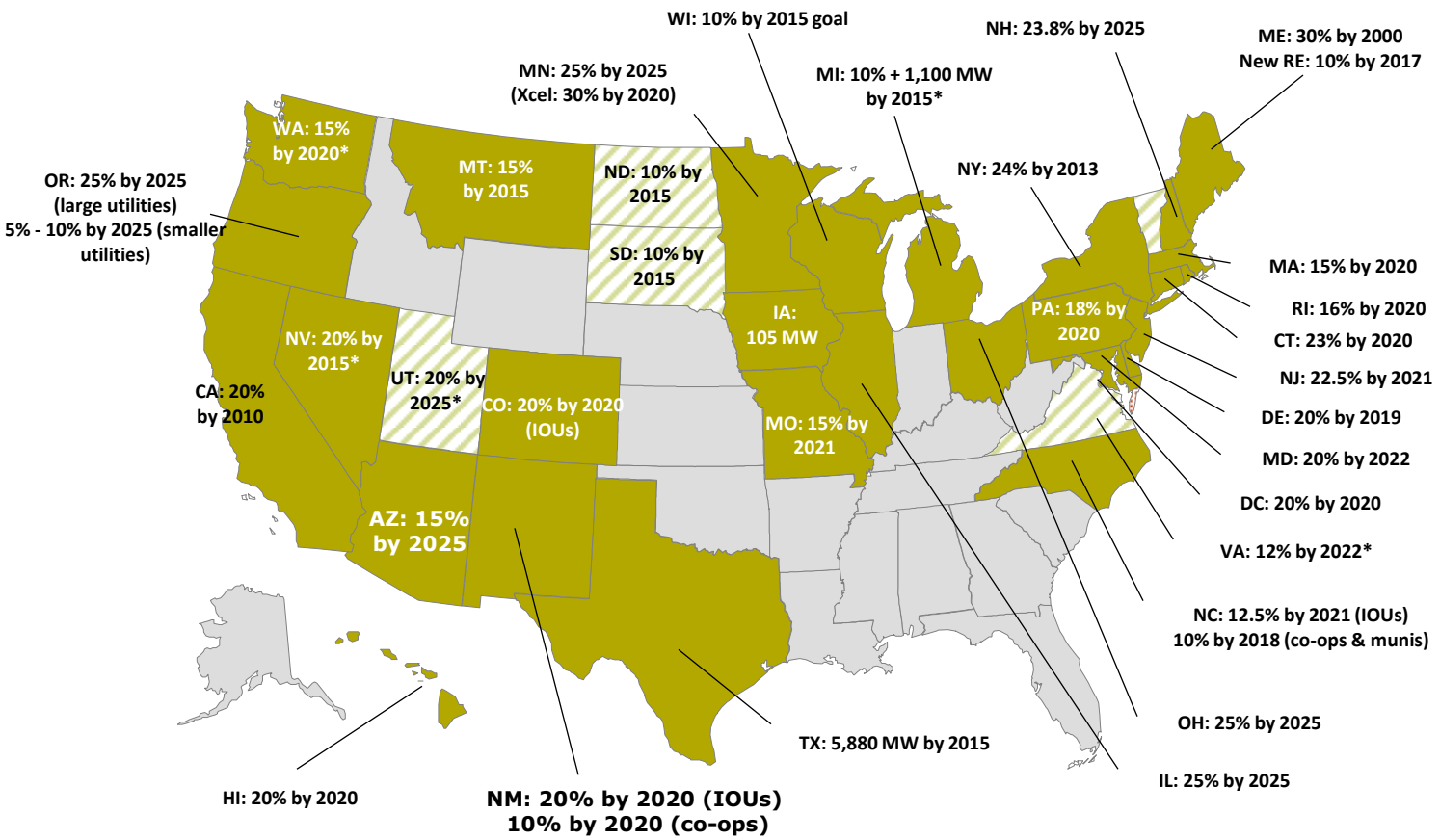
Potential Renewable Fuels Spend (RFS2 by 2022)



Top Refiners have significant purchase obligations

Source: U.S. EPA, Company Website, CIBC World Markets Inc.

U.S.: Action is Occurring at the State level



31 States have already adopted an Renewable Portfolio Standard providing long term support for renewables

RPS legislation is inconsistent state to state

Penalties range from $0-50/MWh

31 states have a RPS, but will they be enforced?

Source: DSIRE.

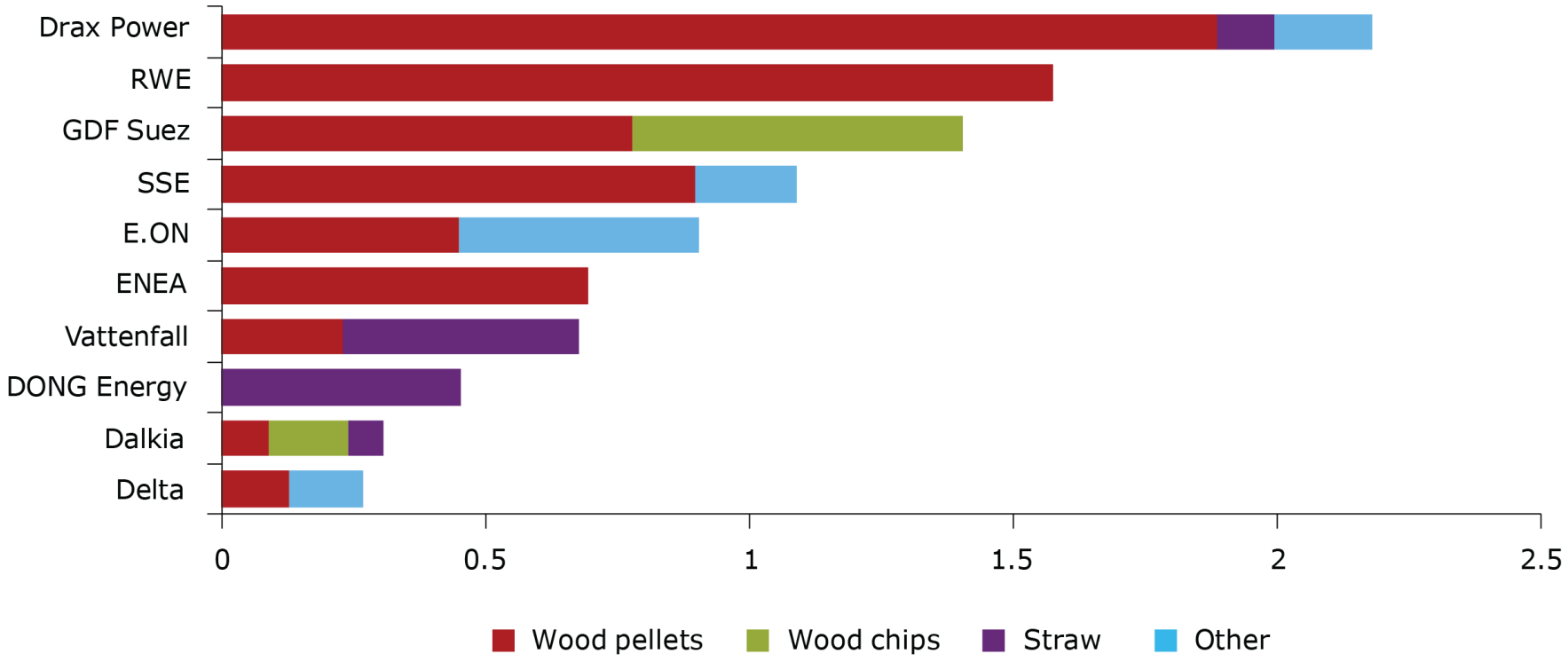
Europe

- Binding targets for 2020:
  - 20% reduction of CO_2 emissions
  - 20% energy from renewable sources
  - 20% improvement in energy efficiency
  - 10% biofuels in transport

- If the 2020 targets are binding, it is estimated that the EU will have to import ~200 m3 of biomass in 2020.
  - Greater than Canada's annual harvest in 2010 of ~140 million m^3

- Three biggest demanders for biomass in Europe are Drax, RWE and GDF Suez
  - Big power generation utilities which are currently very dependent on coal.

Biomass Demand for Co-Firing by Parent Company 2011 *(million ODMT):*
Europe's Largest Demanders of Biomass for Power



Note: Using installed capacity rates in the UK, Netherlands, Poland and Denmark – this graph accounts for 83% of installed capacity. "Other" biomass includes palm kernel shells, energy crops and other biomass sources.
Source: Company reports, Bloomberg New Energy Finance, CIBC.

Recent Developments in the UK

- On Nov 23 the coalition government provided clarification on its new Energy Bill, which is expected to be released in draft form in early December.

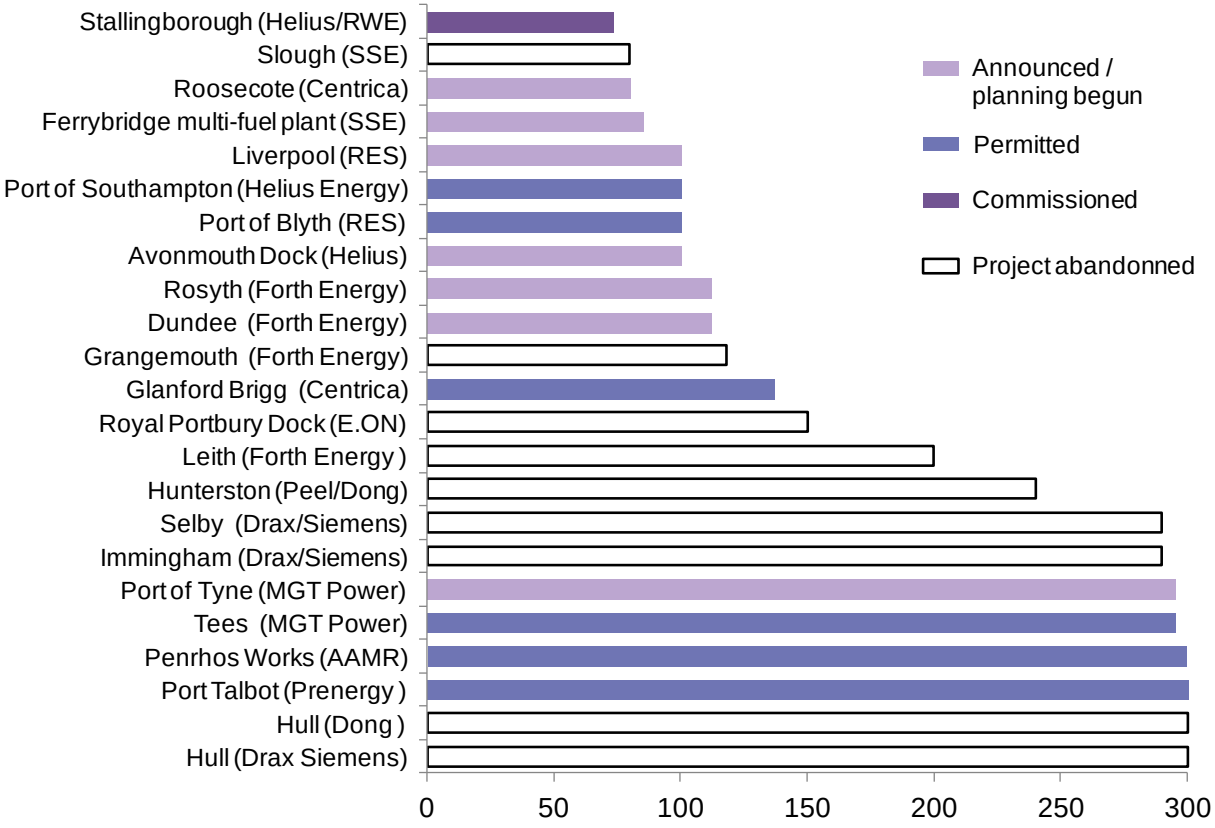
- Support for renewables will be backed by a new government-owned company.
  - It will underwrite the new "Contracts for Difference" that will support renewable energy – draft strike prices to be announced in Q2/2013.
  - Serve as a single counterparty, which will decrease the cost of capital.
  - Will have levy-raising powers to pass costs through suppliers onto consumer energy bills.
  - Cost of the "low-carbon energy support" is capped at a surprisingly high GBP 7.6 bn ($12.2 bn) in 2020 in today's prices (vs current envelope of GBP 2.4 bn in 2012/13).

- Clarification of a binding "carbon budget" for the power sector in 2030 has been put off until 2016.

- However, the recent announcement does provide a more stable medium-term framework for clean energy investment.

- In January 2012 the pipeline in the UK for dedicated biomass power projects with plans for greater than 70 MW was 3.8 GW.
- As of Nov 2012, seven large biomass plants, with a combined capacity of over 1.2GW have been abandoned - and more projects are likely to be cancelled.

UK''s Large Dedicated Biomass Plants (MW)



Note: The analysis only includes new build dedicated biomass plants with installed capacities of greater than 70MW; it does not include co-firing or coal conversions plants.
Source: Bloomberg New Energy Finance.

- It is more cost-effective to concentrate scarce public capital on conversion coal plants, and not large new-build, dedicated biomass plants.

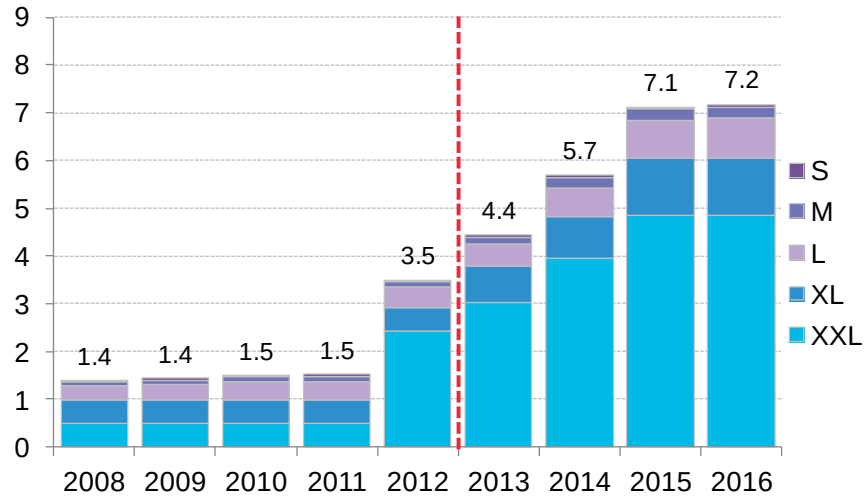
- The UK Gov't is considering a 1GW cap for dedicated biomass power plants without Combined Heat & Power (CHP).

- Despite the announced cancellations, the UK remains the EU's most attractive bioenergy growth market in the next 5 years.

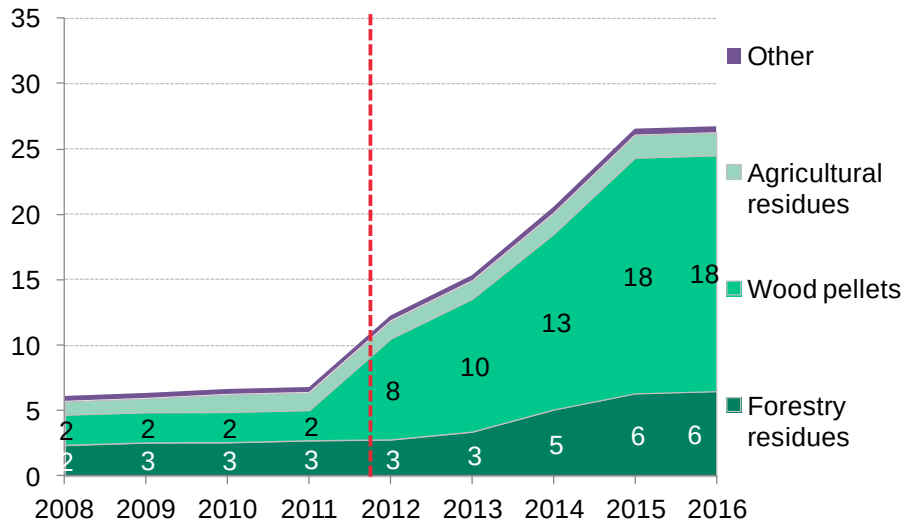
- In a Base Case scenario, biomass power in the UK is expected to rise from 3.5 GW in 2012 to 7.2 GW in 2016, and the associated biomass is expected to rise from ~12 to ~26 million ODMT (the most of which are pellets).

- A Maximum Case scenario (i.e., if 90% of the announced projects are completed) has an additional 1GW of power by 2016, which is associated with ~7 million more ODMT of biomass

Biomass-to-Power in the UK *(GW)*



Feedstock Demand in the UK *(million ODMT)*



Note: Scenarios are based on the likelihood of success according to how well projects are keeping to plan.. Projects have been divided into sizes S (<5MW), M (5-20MW), L (20-70MW), XL (70-250MW), XXL (>250MW).

Wood pellets are mostly made from sawdust; the sudden increase in wood pellet demand in 2012 is due to the coal-to-biomass conversion of Tilbury (750MW), and the expected conversion of Ironbridge (375MW);

Source: Bloomberg New Energy Finance.

China

- **The Chinese Government is now leading the world in supporting the Renewable Energy and Clean Technology sectors**
  - Over $40 Billion invested in 2011
  - Number of national climate change policies in China is twice as large as that of the U.S. at the federal level
  - Special focus on incentives and mandates, that are supported by investment and enabling legislation
  - China Development Bank alone extended credit of ~$35 billion to the clean energy and other "green sectors" in 2010
  - Stringent capacity requirements by sector, with clear interim targets
  - Experimenting with seven regional/provincial carbon trading schemes

China

- In the 12th Five Year Plan, **target of 18 GW of biomass and waste-to-energy power by 2020**
  - **up from <4.5 GW** in 2011
  - 2020 target recently reduced from 24 GW (down 25%, due mainly to concerns re adequate supply of biomass)
- NDRC has a national pellet target of 50 million ODMT – up from 2 million tpy in 2009
- There are concerns related to collection costs and long-term soil productivity resulting from the increased use of agri-biomass for energy
- Message? The Chinese may come looking for a source of biomass near you

Global Biomass Shipping Routes

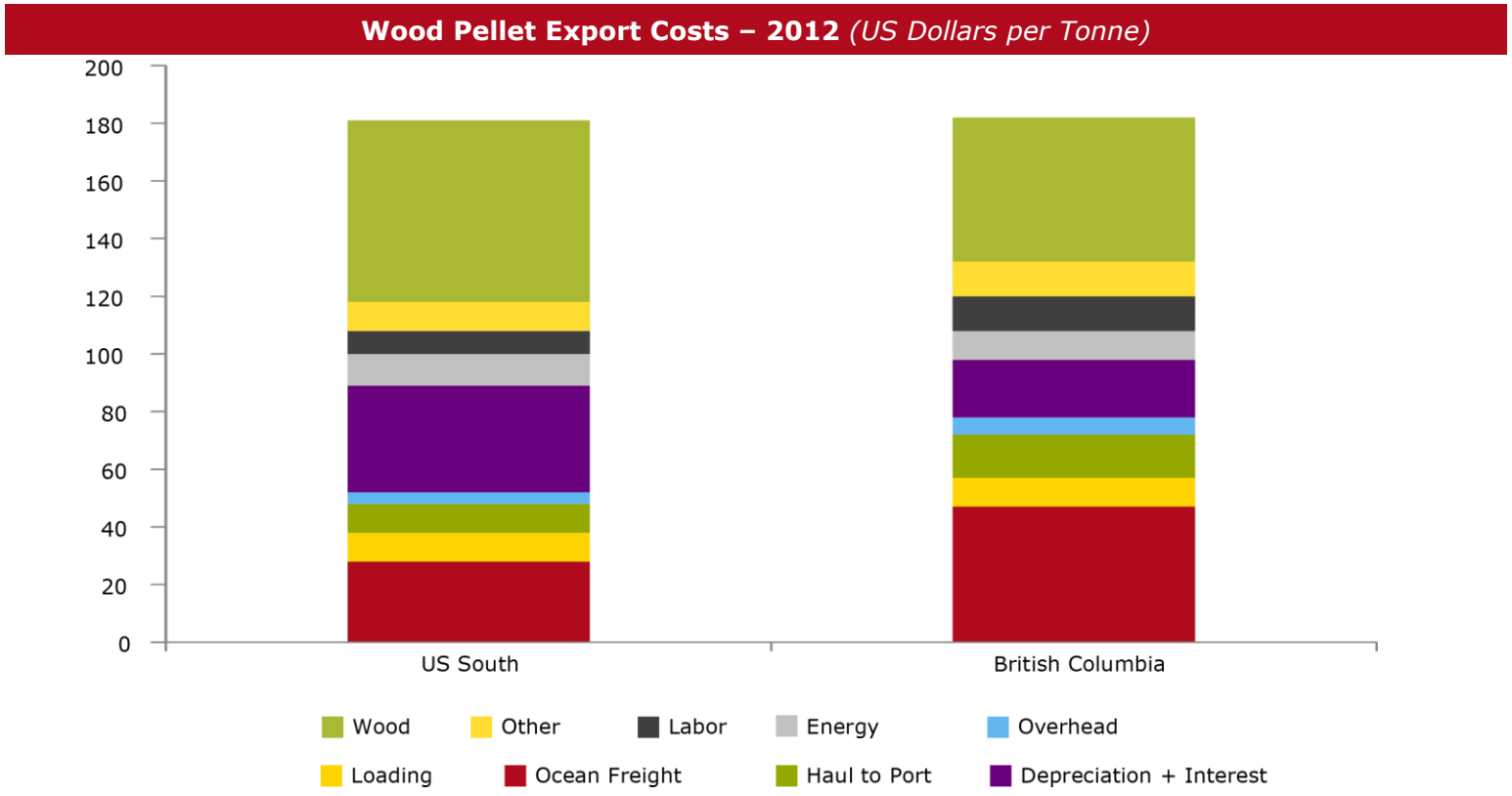
Europe & Asia are the centers of global biomass demand

Note: Dotted cycles represent the major demand centres; the strength of the arrows is relative to their importance as trading routes.
Source: Bloomberg New Energy Finance, IEA.

Wood Pellet Export Costs

- **The cost of producing & shipping pellets to Rotterdam are roughly the same from B.C. & the U.S. South ~ $180/ODMT.**

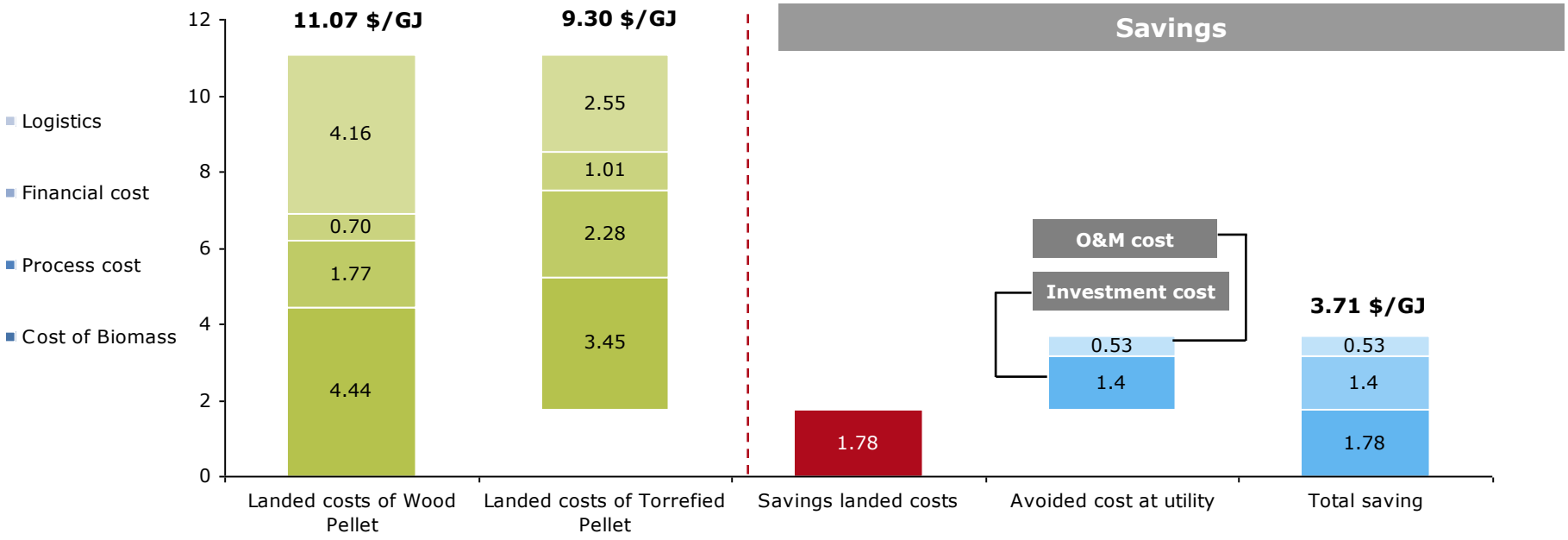
- **What are they from Nova Scotia?**



Regular or Torrefied Pellets?

- Torrefied pellets are expected to become the preferred form of solid biofuel. Torrefaction essentially "roasts" the wood, thus increasing its energy density
- In some cases, the process also makes the wood hydrophobic (i.e., it repels water)
- Torrefaction results in significantly lower costs in the entire value chain
- Leaders in torrefaction technology appear to be Topell, Andritz and New Biomass Energy

Cost Comparison Based on the Same Physical Value Chain *(USD/GJ)*



Assumption: Both plants are located in the south eastern region of the United States, are located 100 km from a deep sea port, and the pellets are shipped to Rotterdam.

* Feedstock cost includes: delivered chipped cost of whole logs for wood pellet; whole logs and logging residues for torrefied pellet assuming 50% moisture content.

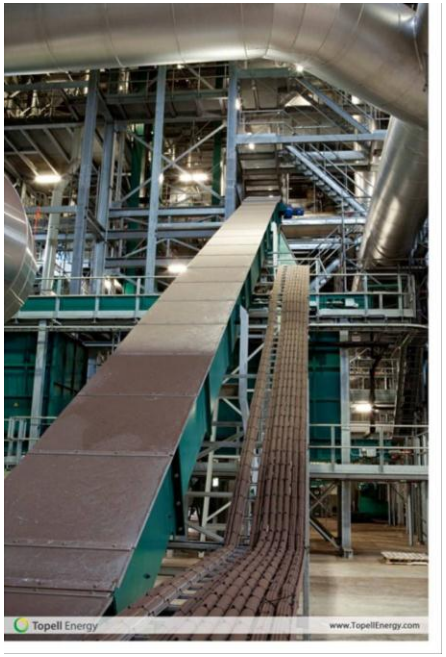
** Process cost includes: electricity, labour, SG&A, binding agent, royalty and other operating costs.

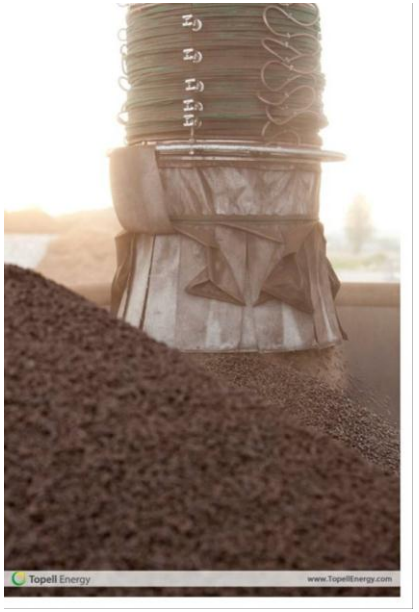
*** Financial cost includes: depreciation, interest on debt.

**** Logistics includes: the cost of transportation and handling from plant to power plant.

Case Study 1: Torrefied Pellets, Topell (Netherlands)

- One of the technologies closest to commercialization – plant constructed in 2010
- Current operating rate @ 50-60%.
- Process period 100 seconds, vs up to 30 minutes for competing technologies





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Case Study 2: Pellets, Suzano Renewable Energy

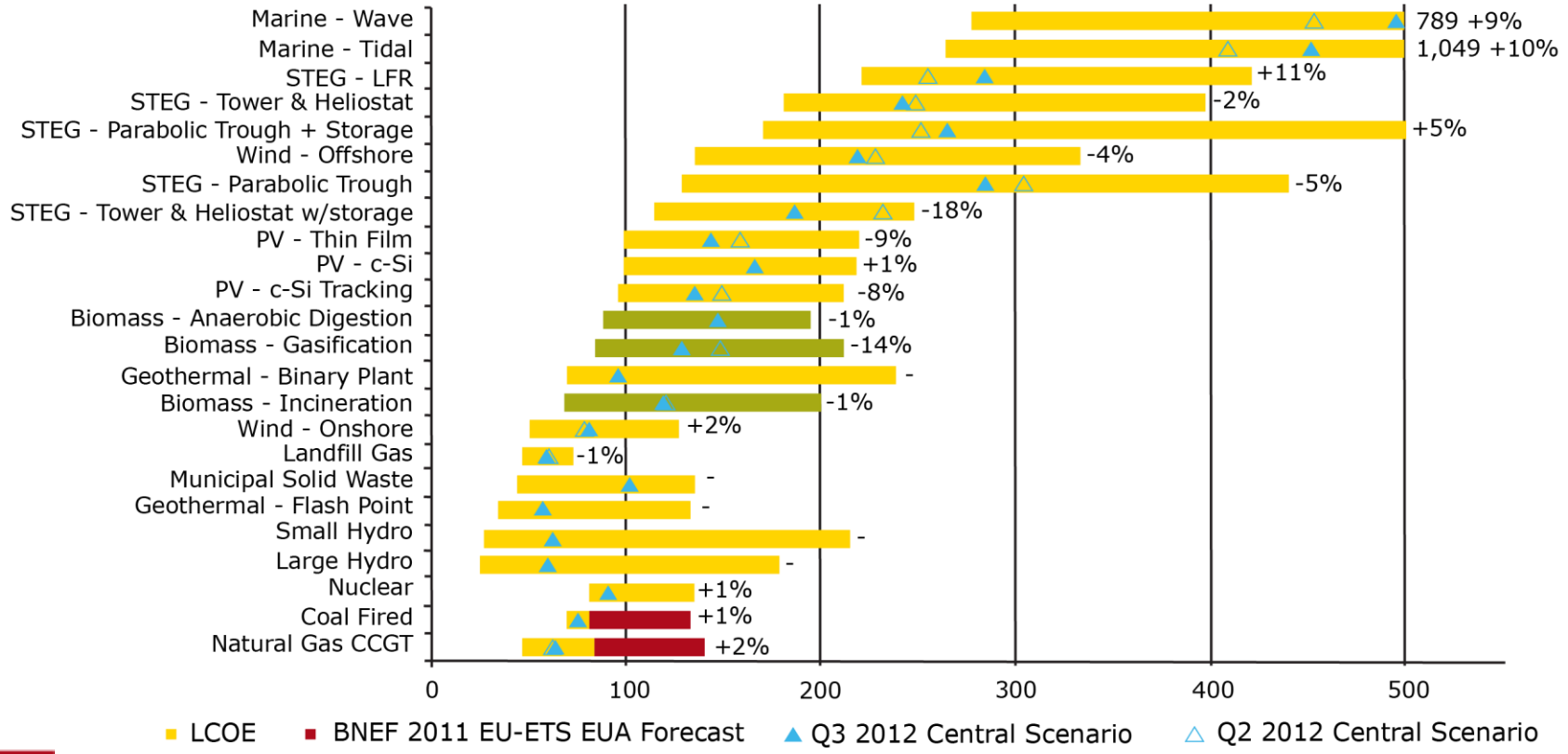
- Spin-off from one of the largest eucalyptus pulp producers in the world, located in Brazil
  - Parent making in-kind contribution of US$320 million, and looking for $220 from outside investors

- Highlights:
  - Based on ~120,000 ha of eucalyptus plantations in N.E. Brazil; close to ports
  - Energy oriented clones (high lignin content/calorific value) – cannot be used to produce pulp
  - Forest yield ~60-80 m3/ha/year (vs ~35-50 for pulp oriented clones)
  - Harvest in 2-3 years (vs 7 years for pulp)

- Three-phase growth strategy
  - Phase 1: Construct three 1 million tonne wood pellet plants (start-up 2014), with off-take agreements with European power utilities
  - Phase 2: Add 2 more pellet plants (2017, 2018) – increases pellet capacity to 5 million tonnes
  - Phase 3: Commercialize biomass-to-liquids technology (date TBD)

- Wide range of costs, depending on local conditions & scale. The LCOE curve is dynamic over time
- With currently commercial technologies, bio-electricity is generally in the bottom half of the cost curve (and co-firing in an existing coal plant is very cheap)
- Biomass is different than most renewable sources of energy – provides base load power, and optionality (e.g., liquid fuels) – features worth emphasizing

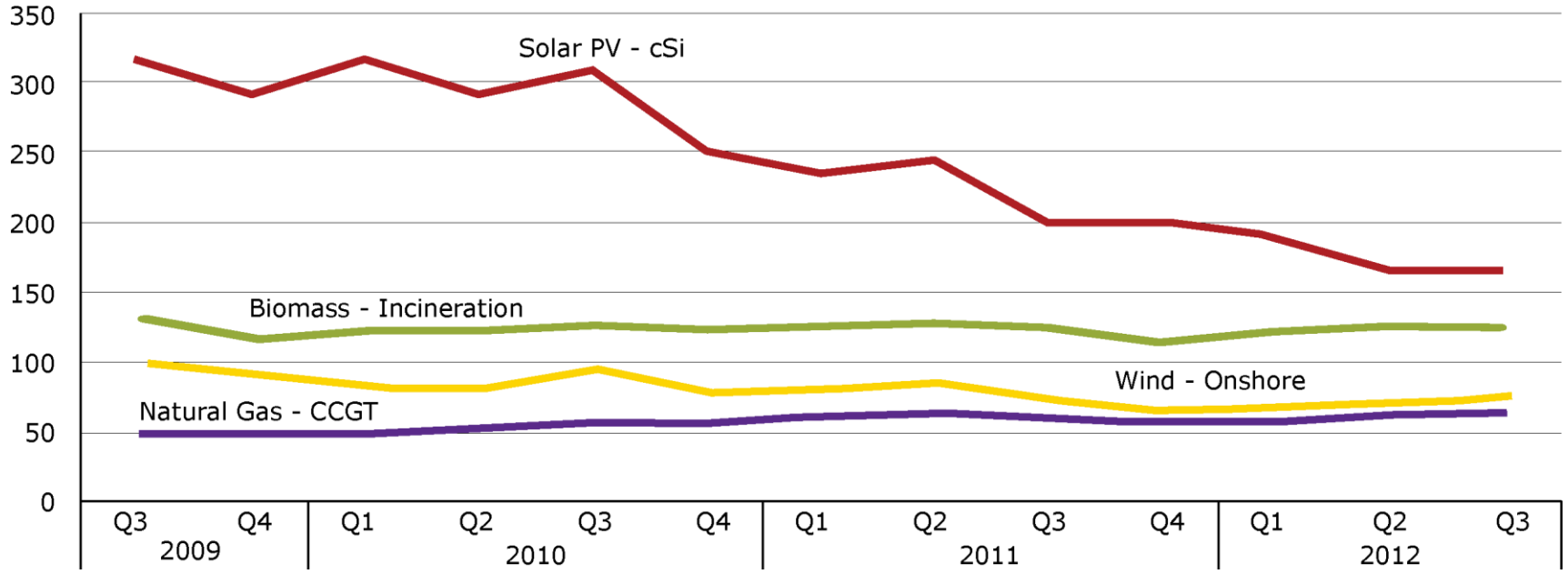
Levelised Cost of Electricity Q3 2012 *($/MWh)*



Note: Carbon forecasts from the Bloomberg New Energy Finance European Carbon Model with an average price to 2020 of $30/mt. Coal and natural gas prices from the US EIA and BNEF. Percentage change represents change from Q2 2012.
Source: Bloomberg New Energy Finance.

- Natural Gas remains the lowest cost source, but prices have bounced ~2x since early 2012. $6/GJ is not unrealistic within 3 years.
- On-shore Wind is becoming surprisingly price competitive, but it is intermittent.
- Solar PV & On-shore Wind power costs have fallen ~50% since 2009.
- Biomass-based power costs have remained quite stable, but the relative cost of bio-electricity will likely continue to deteriorate going forward.

Levelized Cost of Electricity *(Nominal prices, US$/MWh)**

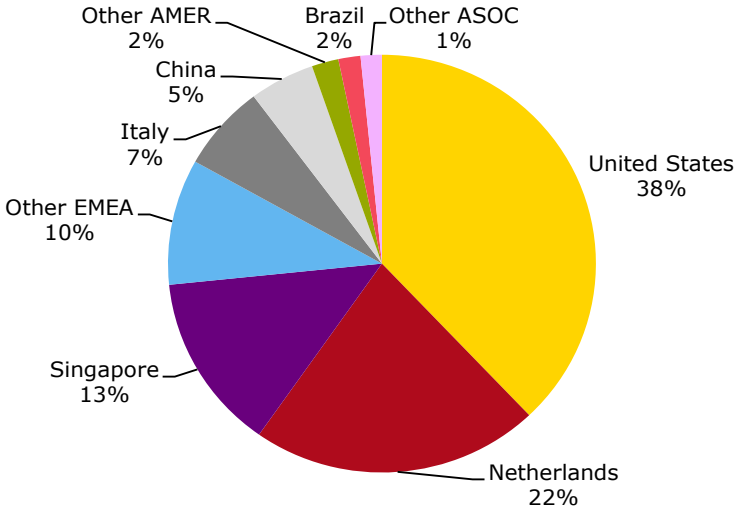


* The LCOE reflects the costs of development, financing, construction, maintenance and operation.
Source: Bloomberg New Energy Finance, CIBC.

Global Next Generation Biofuel Investments

- Investments in Next Generation biofuels plants peaked last year at ~$2 billion, and total investment reached almost $3.5 billion when we include R&D.
  - Record levels in 2011 in response to announced mandates in the U.S. and Europe.
  - However, they have fallen dramatically this year due primarily to policy uncertainty.
- The U.S dominates the investments in this field, with the bulk being cellulose-based. (The large investments in Singapore & the Netherlands largely use palm oil as an input.)
- We expect the aggregate investment to significantly increase over the next 5-10 years, with most of the rise occurring in the United States and Brazil.

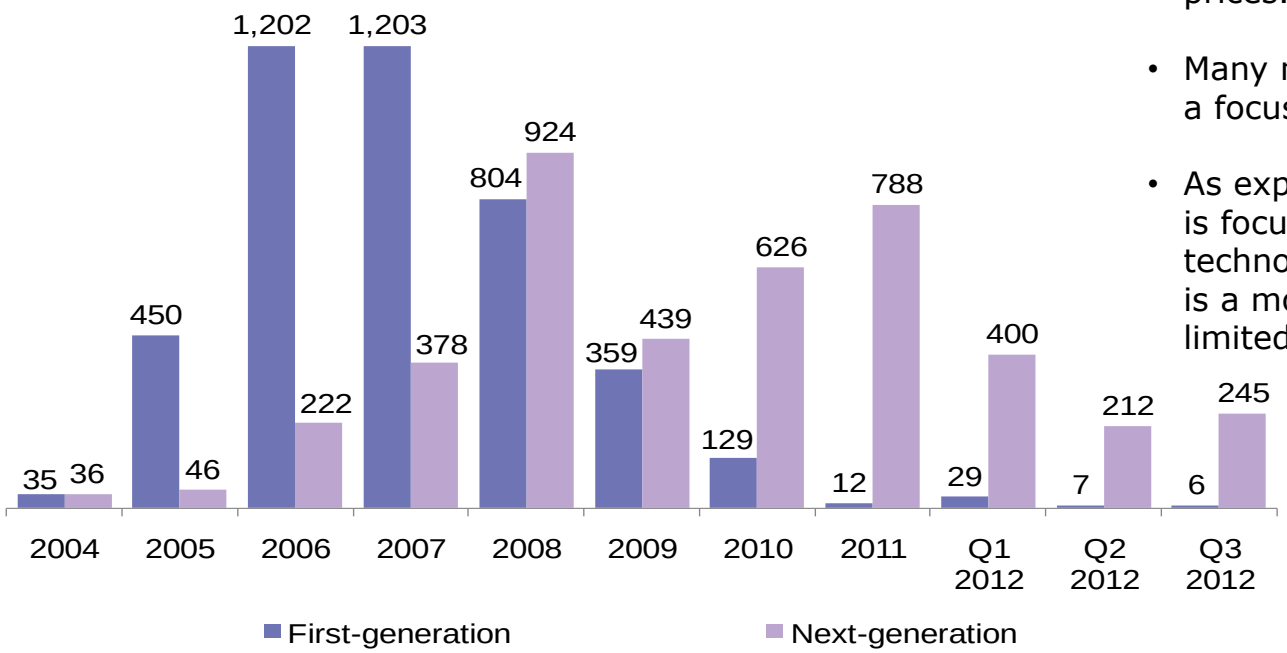
Global Asset Financing in Second-Generation Biofuels, by Country *(2005-2012 Q3)*



Source: Bloomberg New Energy Finance, CIBC.

IV. Next Generation Biofuels

VC/PE BIOFUELS INVESTMENT, 2004–Q3 2012 ($M)

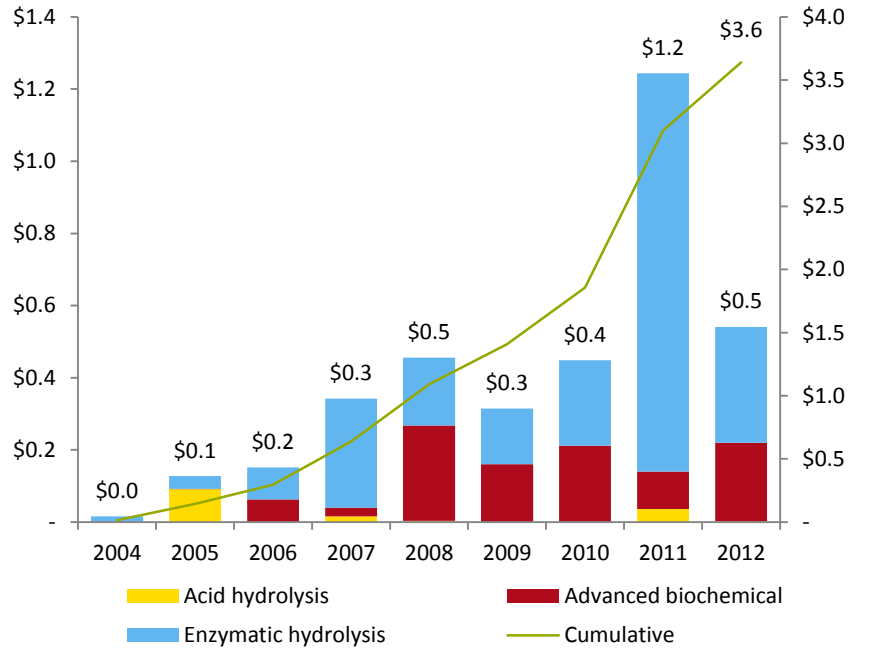


- At the current run-rate, 2012 will be a record year for VC/PE investments in Next-generation technologies….despite policy uncertainty & low natural gas prices.
- Many newer investments include a focus on bio-chemicals
- As expected, less VC/PE capital is focusing on first-generation technologies/projects because it is a more mature industry with limited growth prospects.

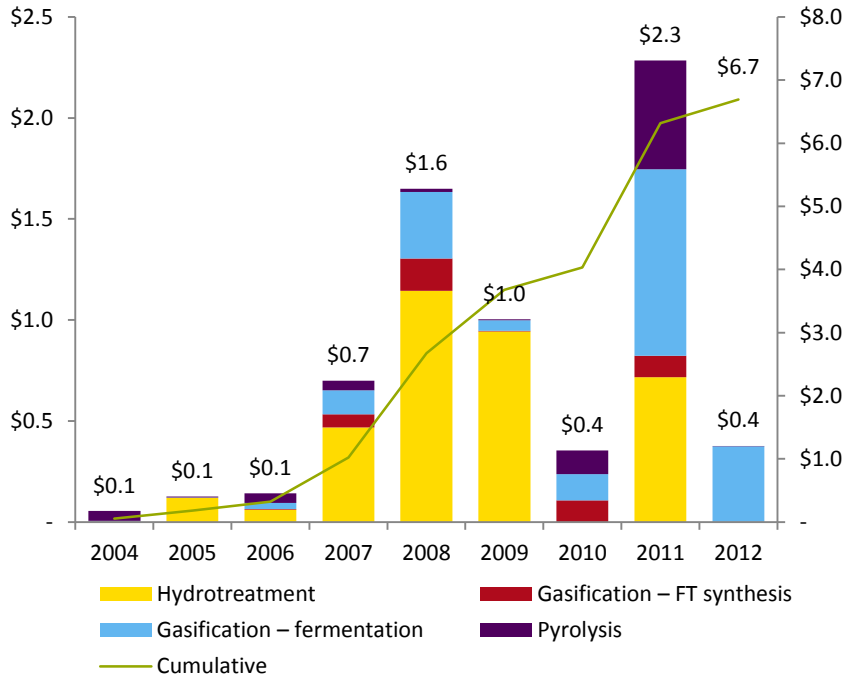
Source: Bloomberg New Energy Finance

Total Investment in Next Generation Biofuels, by Technology

Total Investment In Biochemical Technologies, 2004 – 2012 Q3 *($ Bn)*



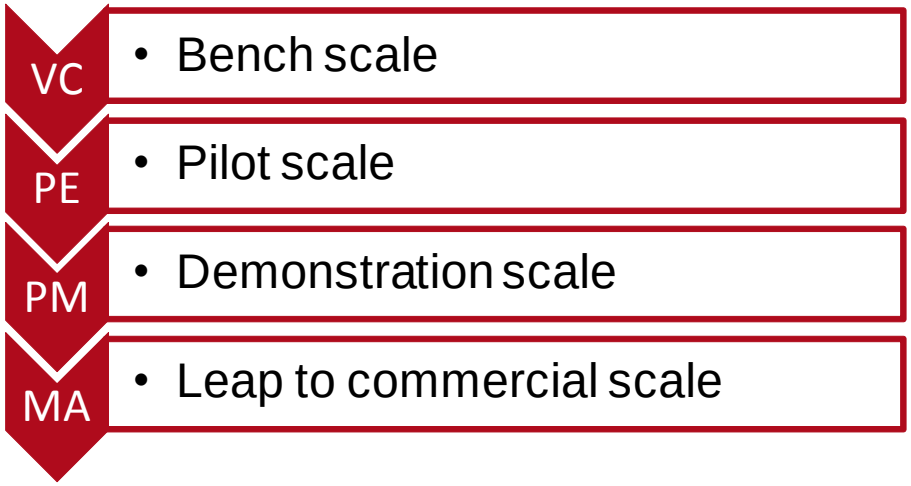
Total Investment In Thermochemical Technologies, 2004 – 2012 Q3 *($ Bn)*



- Overall investment in Next Generation biofuels has exceeded $10 billion since 2005 (includes asset finance, VC/PE, Gov't, public market investments)
- Roughly 65% has focused on Thermochemical technologies, which are generally better at handling heterogeneous feed stocks like wood. Hydro-treatment and Gasification technologies received the bulk of the money.
- Roughly 35% went to Biochemical technologies, with Enzymatic hydrolysis receiving most of the investment.

The Advanced Biofuels industry is still in its early stage of development

Next-Generation Technologies Typical Investment Flow

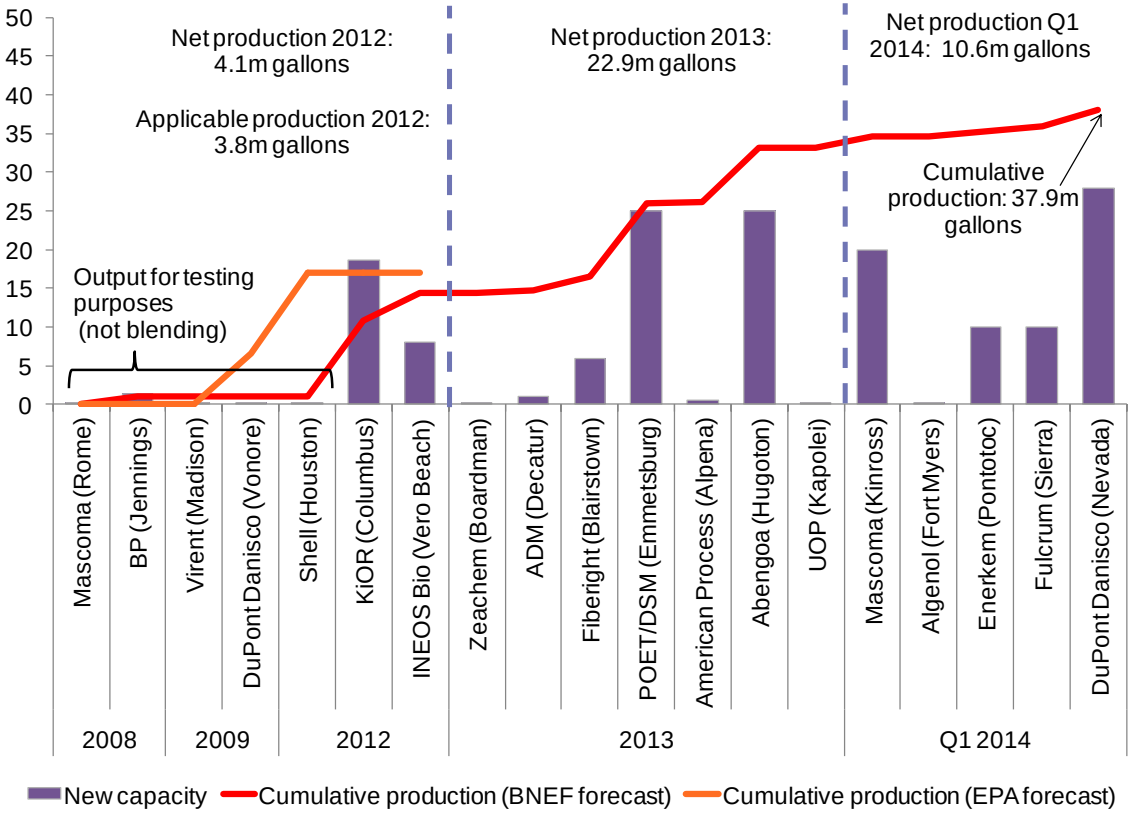


BioFuel Facility Scale Definitions by Production *(M gallons/year)*

Bench	< 13,000
Pilot	13,000 to 130,000
Demonstration	130,000 to 13m
Commercial	>13m

- Most of the plants using Next-generation biofuel technologies have only been operated at the large pilot and demonstration scales. As a result, any financial analysis must be treated with caution and supplemented with significant sensitivity analysis.
- A reasonable "rule of thumb" is to only classify as "Commercial" those biofuel plants producing in excess of 13 million gallons (~50 million litres). However, world scale First-generation biofuel plants generally have an annual capacity of 100 million gallons (378 million litres)..
- Ensyn's benchmark 400 tpd pyrolysis plant would have a capacity to produce roughly 85 million litres.

U.S. Cellulosic Biofuel Capacity and Production, 2012–Q1/2014
(M Gallons)



- Net production in the U.S. is expected to be ~ 20 million gallons in 2013.
- Ensyn is already able to produce ~5 million gallons of cellulosic biofuel at its plant in Renfrew, Ontario
- If you believe all the announcements, there is a potential construction of 27 bio-refineries in N. America by 2015 – producing 1.6-2.6 billion gallons……quite unlikely.
- If we pay attention, we will learn a great deal over the next three years.

Source: Bloomberg New Energy Finance, CIBC

Within the bio-energy space, is there a specific role for government? Action can be justified when there is some form of market failure

- The most obvious market failures are associated with pollution-related externalities and the provision of information
  - A Negative Externality (e.g., pollution) results when the full cost is not paid by those who generate it.
    - ⇨ While the form of the instrument to reduce the pollution can be debated (e.g., price on carbon vs volumetric limits), the bias should be toward reducing the pollution in the most efficient way.
  - Lack of information on the availability, quality and cost of biomass is a major challenge for investors in bioenergy. "Outsiders" are at a particular disadvantage.

- Government's can also create "positive externalities".
  - R&D&D is a good example, in which the full benefits to the economy are not captured by the organization performing the activity – government is the only entity that cares.
  - Due to a degree of risk aversion, forest product companies often have a policy of being "first to be second" in order to avoid the risk associated with new technologies. By helping to finance the first commercial project, governments may be a catalyst for the adoption of these technologies.

- There can also be failures in the capital markets. For example,
  - Analysis suggests the most efficient means of building bio-energy capacity is often to integrate it into an existing forest products plant instead of building a new green-field complex.
  - However, traditional project debt financing requires a range of guarantees/warranties from the EPC contractor in order to lend the money. Unfortunately, the EPC contractor generally will not provide the required guarantees/warrantees if used equipment is part of the project.
  - In this case, the government may play a constructive role in providing capital or some form of guarantee/insurance.

U.S. Policies Worth Emulating?

- Renewable Fuel Standard – Two.
  - Effective form of support which creates a market, and helps de-risk investments in Next Generation Biofuels.
  - Actually a potential source of revenue for the Canada Revenue Service.
  - Already legislated in the U.S.

- Procurement of advanced biofuels by the Department of Defense.
  - Long-term off-take contracts

- Expansion of Master Limited Partnership and Real Estate Investment Trust Structures to renewable energy developers
  - Would lower the cost of capital for renewable projects by avoiding "double taxation";
  - Similar structure as the previous Income Trust Structure. Since this was abandoned by the government due to the tax losses, this will likely face opposition from the Dept of Finance.
  - Likely to be legislate in the U.S. in 2013.

APPENDIX A:
A CANADIAN SUCCESS STORY: ENSYN CORP.

Case Study 3: Renewable Fuel Oil (Ensyn)

- Ensyn's Fast-Pyrolysis process is one of the very first commercially operating biomass to liquid fuels technologies

Red Arrow Products Company

- Commercialized in 1989
- Four operating facilities
- Food ingredients and liquid fuels market

Ivanhoe Energy

- Commercialized in 2004
- 1,000 BDTPD
- Heavy oil facility
- Petroleum upgrading

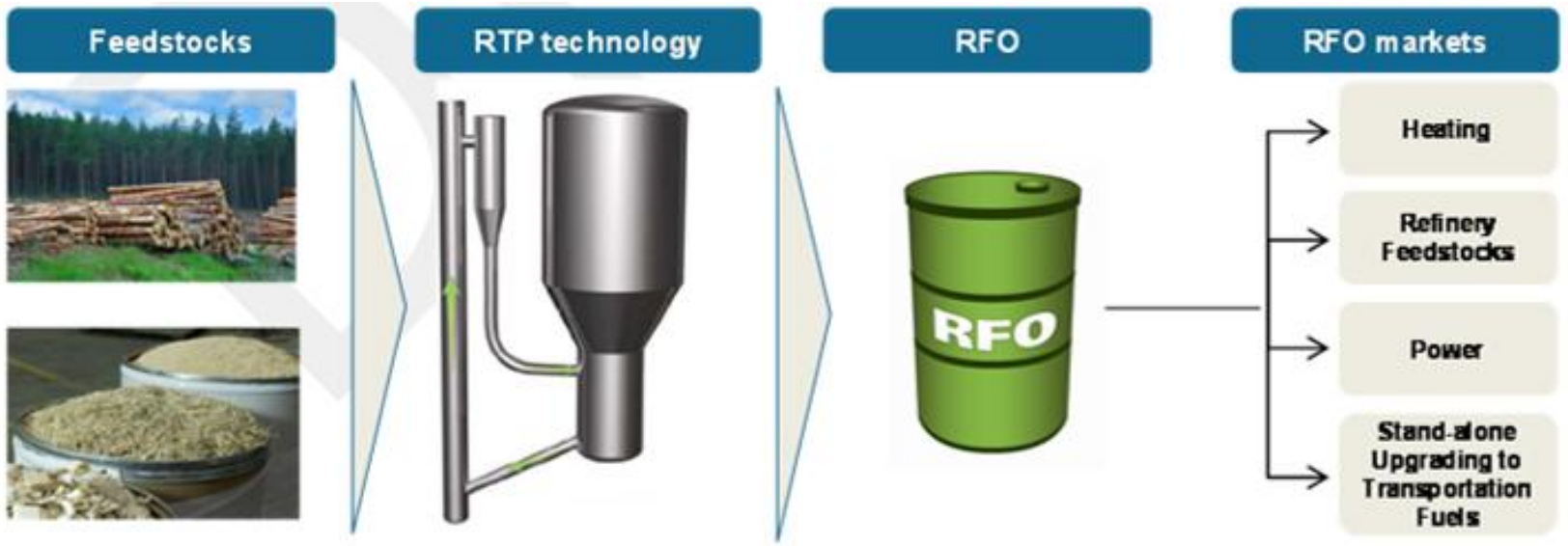
Renfrew Facility

- Commercialized in 2007
- 100 BDTPD
- Renewable fuels

Over 100 million liters (30 million gallons) of Renewable Fuel Oil (RFO) produced to date

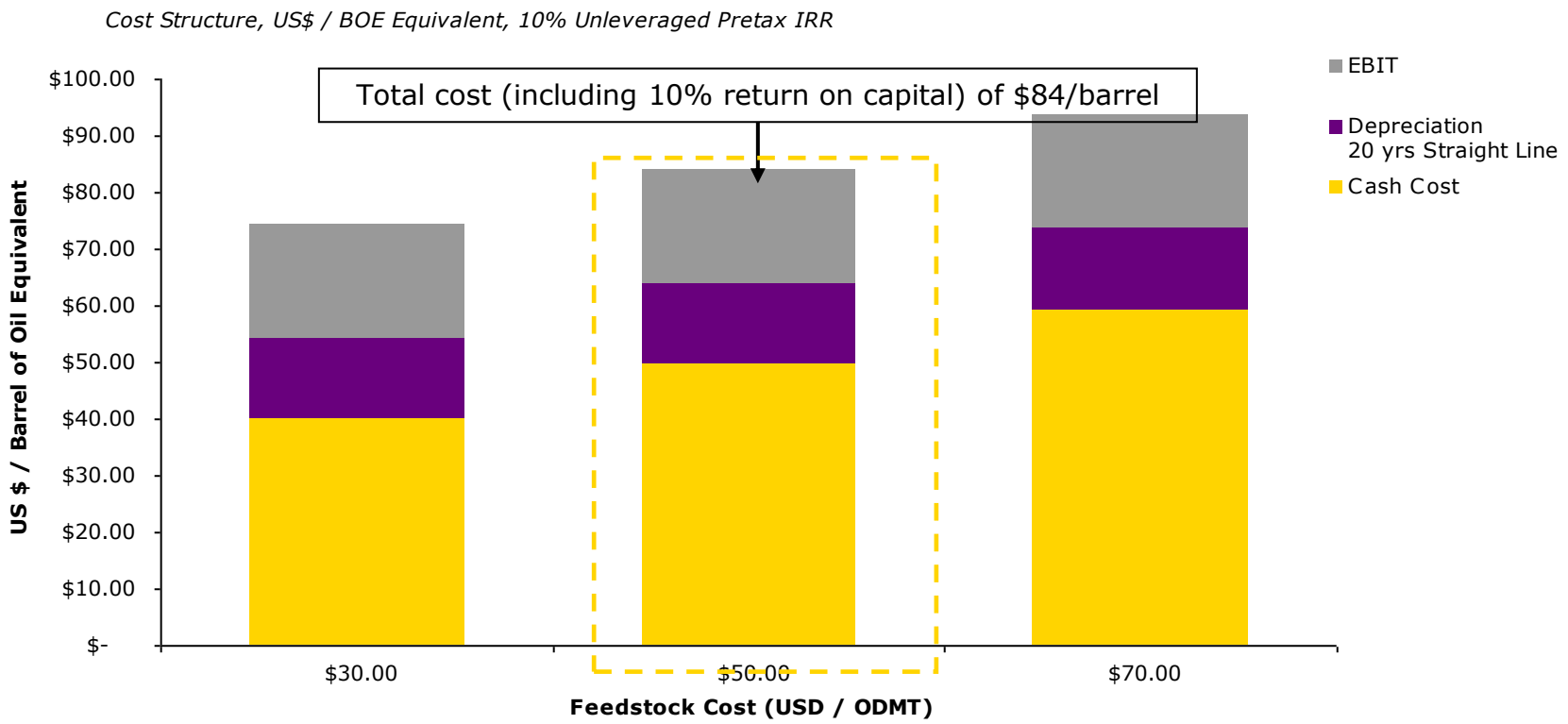
- Benchmark plant consumes 400 ODMT of biomass, and produces 850 BOE per day (23 million gallons/year of RFO)
- Capital cost is $60-$100 million, depending on existing infrastructure & location

Overview of Value Chain for Ensyn's Renewable Fuel Oil (RFO)



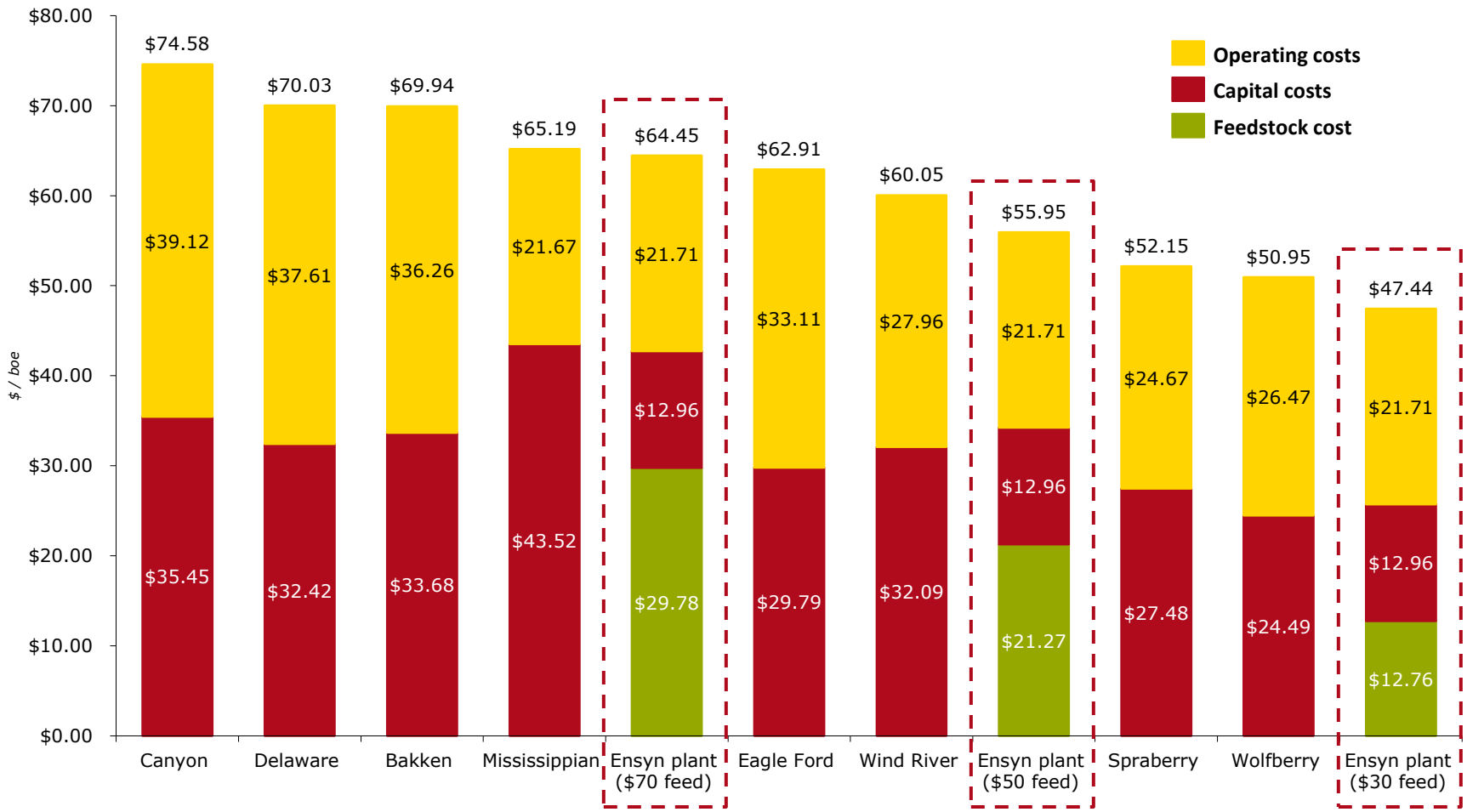
- Joint venture between Ensyn and Honeywell has resulted in a significant reduction in costs
- Given biomass price of $50/ODMT, the cash cost of RFO is now <$50/barrel of oil equivalent & Total Cost ~$85/barrel1
- Pre-tax unlevered IRR of 18% in base case (assumes no values for environmental attributes likes RINS)

Cost of Producing RFO Under Alternative Biomass Costs *($/Barrel of Oil Equivalent[1])*



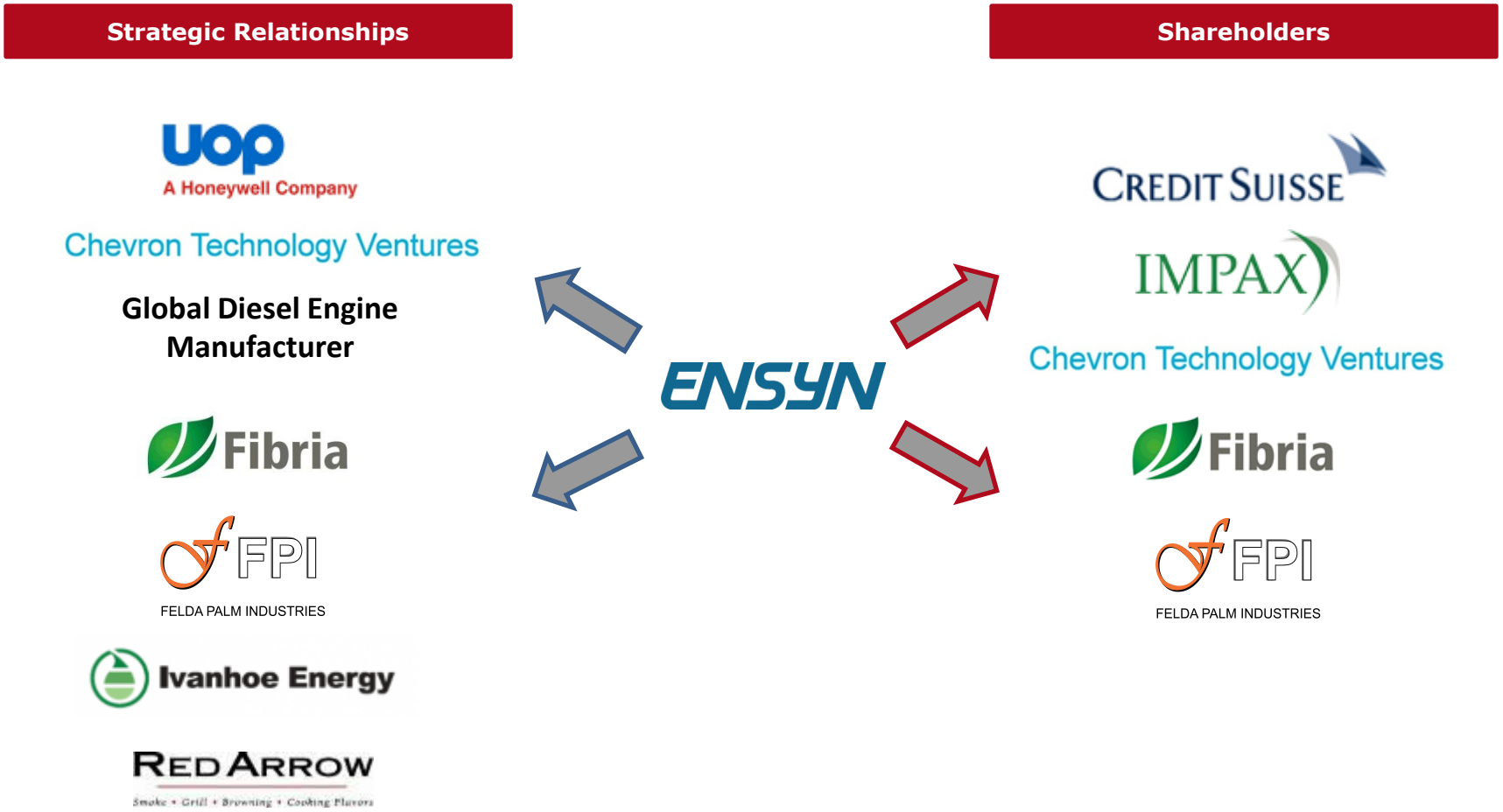
[1] Source: Ensyn Management.

RFO Cost of Production vs Petroleum Crude



Source: Company disclosure, Wood Mackenzie, Herold, CIBC World Markets Inc., Deutsche Bank.

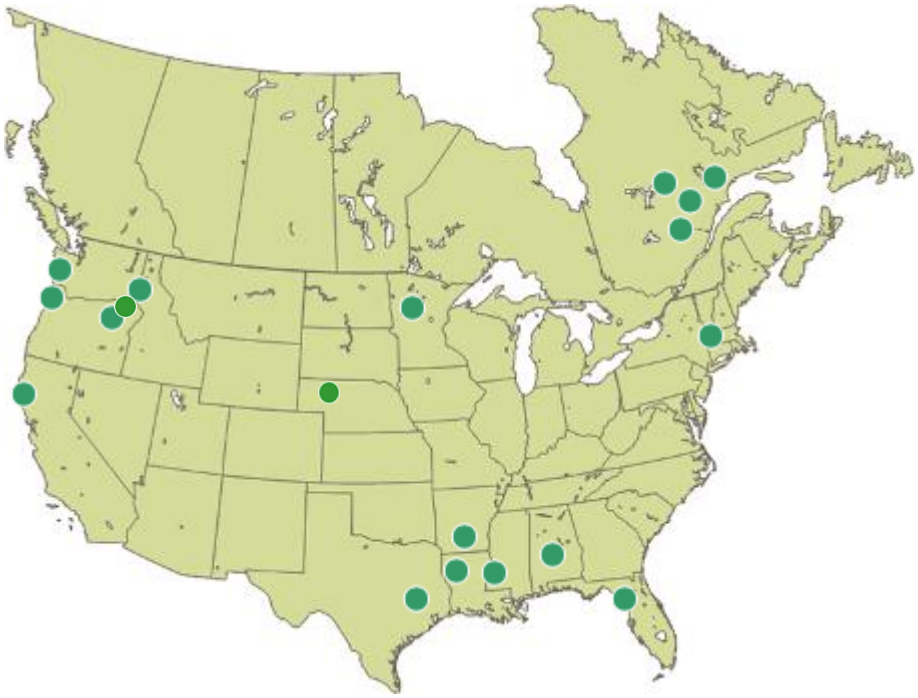
Key Strategic Relationships in Place – critical for mitigating both technological and business model risk.



Ensyn-Fibria Strategic Alliance

- Fibria Celulose S.A., (NYSE: FBR) is the world's largest market pulp producer, with production of over 5 million tonnes per year
- Ensyn established a strategic alliance with Fibria in October, 2012
- Ensyn and Fibria have established a 50/50 joint venture for the development of RTP projects in Brazil
- Fibria invested $20 million for 6% ownership of Ensyn Corporation

North American Roll-Out



- Discussions underway with 15+ major fiber owners in US and Canada
- Discussions based on joint ownership of RFO production units
- Target partners capable of multiple facilities

APPENDIX B:
RENEWABLE ENERGY RISK IN CONTEXT

There are significant risks associated with investments in bio-energy (e.g., feedstock price risk)

However, what about the risks elsewhere in the energy sector?

Consider the following:

- **Security of oil supply**
  - Political unrest and revolutions in Africa/Middle East; Russian export policies
  - Libyan oil production fell from 1.5m barrels/day to almost zero in less than 3 weeks

- **Price uncertainty**
  - Over the past 22 years the annual percentage error of the U.S. Energy Information Administration's forecasts has been:
  - 20% for electricity prices
  - 48% for coal prices charged to generating plants
  - 68% for natural gas at the wellhead

- **Cost over-runs**
  - Highest profile nuclear project in Europe is Finland's Olkuluoto 3 plant, which is running 60% over budget, and will start five years late. (UPM-Kymmene is one of the investors.)

- **Carbon pricing**
  - In Europe, the EU-ETS has been running for six years, and is expected to continue
  - Carbon trading is likely to be introduced in China, S. Korea and Australia over the next 5-10 years.
  - Even if carbon trading doesn't spread, carbon prices are being introduced by other means:
    - Regulation on energy efficiency
    - Energy taxes
    - Vehicle gas mileage rules

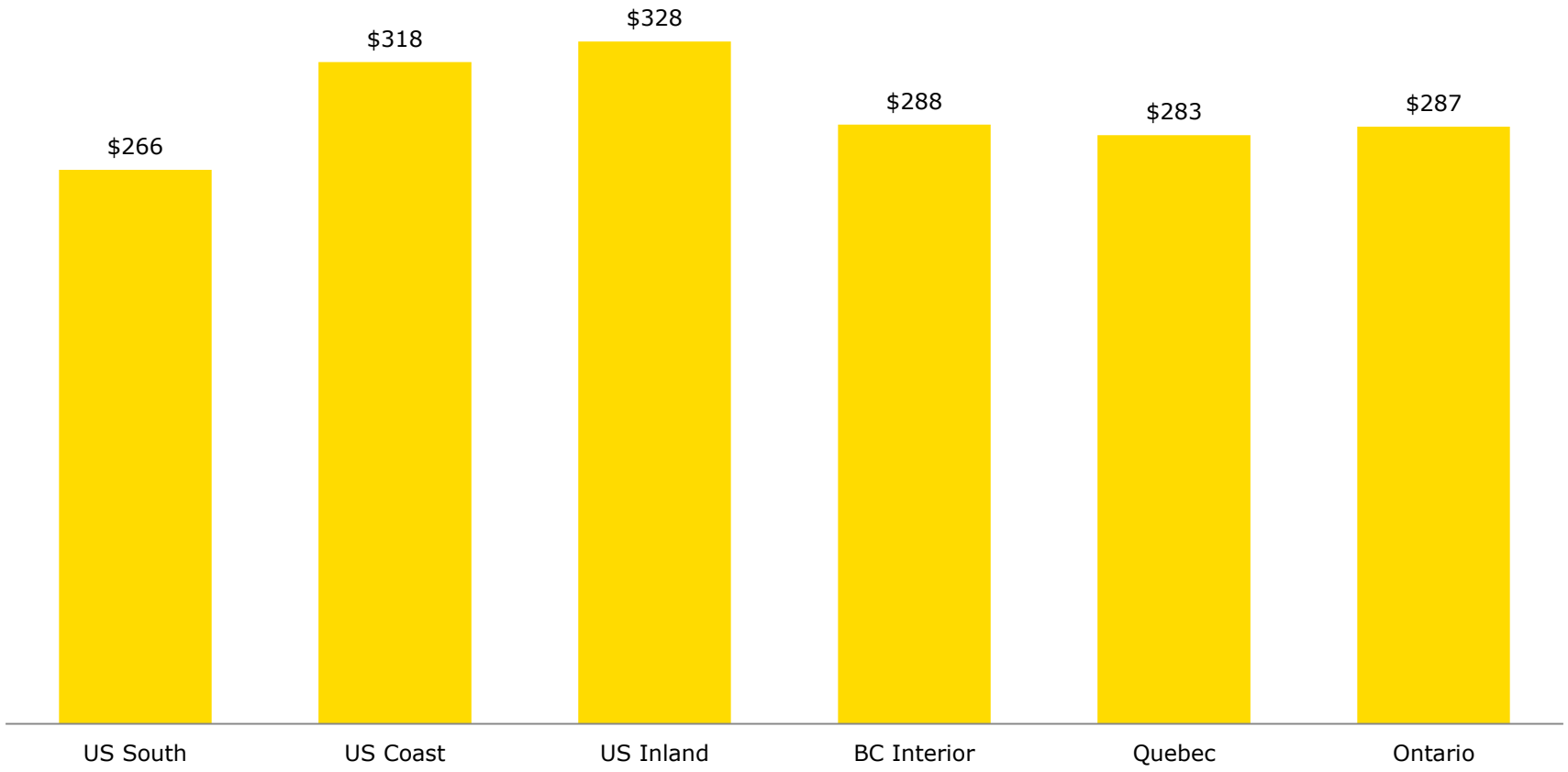
- **Catastrophic Losses**
  - Deepwater Horizon spill in the Gulf of Mexico could cost BP over $20 bn.
  - Leak at the Fukushima nuclear plant could result in a protracted loss of economic output in the 20 km exclusion zone of $128.5 bn (Rouibini Global Economics)

If we take a broader perspective, are investors "too worried" about the risk associated with bio-energy?

APPENDIX C:
SOFTWOOD LUMBER

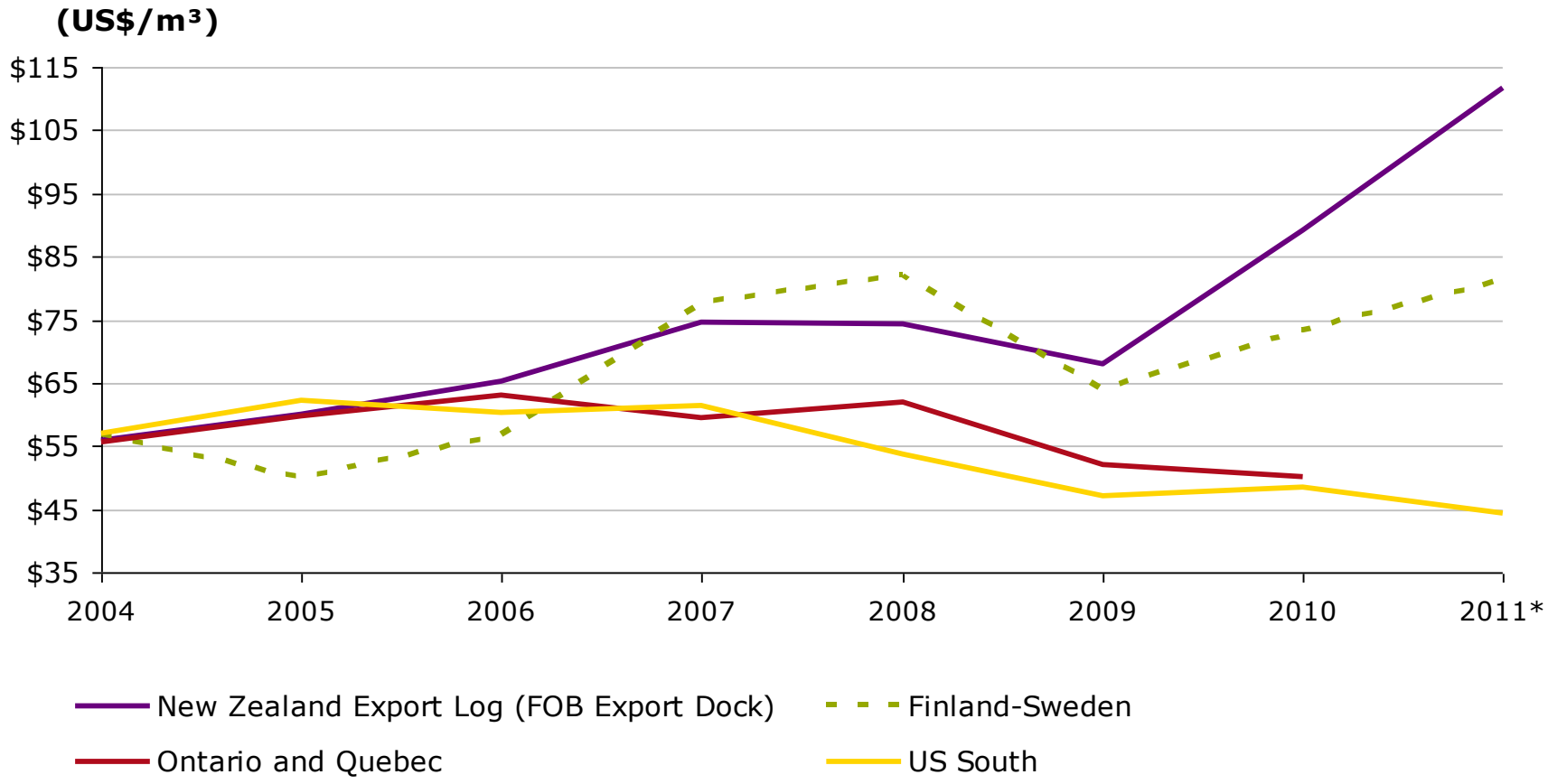
- The U.S. South is the low cost lumber region, but the current cost curve within N. America is quite flat. Going forward, its shape will depend largely on the $C/$US exchange rate and relative changes in regional sawlog prices

Regional Total Variable Cost Delivered Chicago (US$/MBF)



Source: RISI Inc.

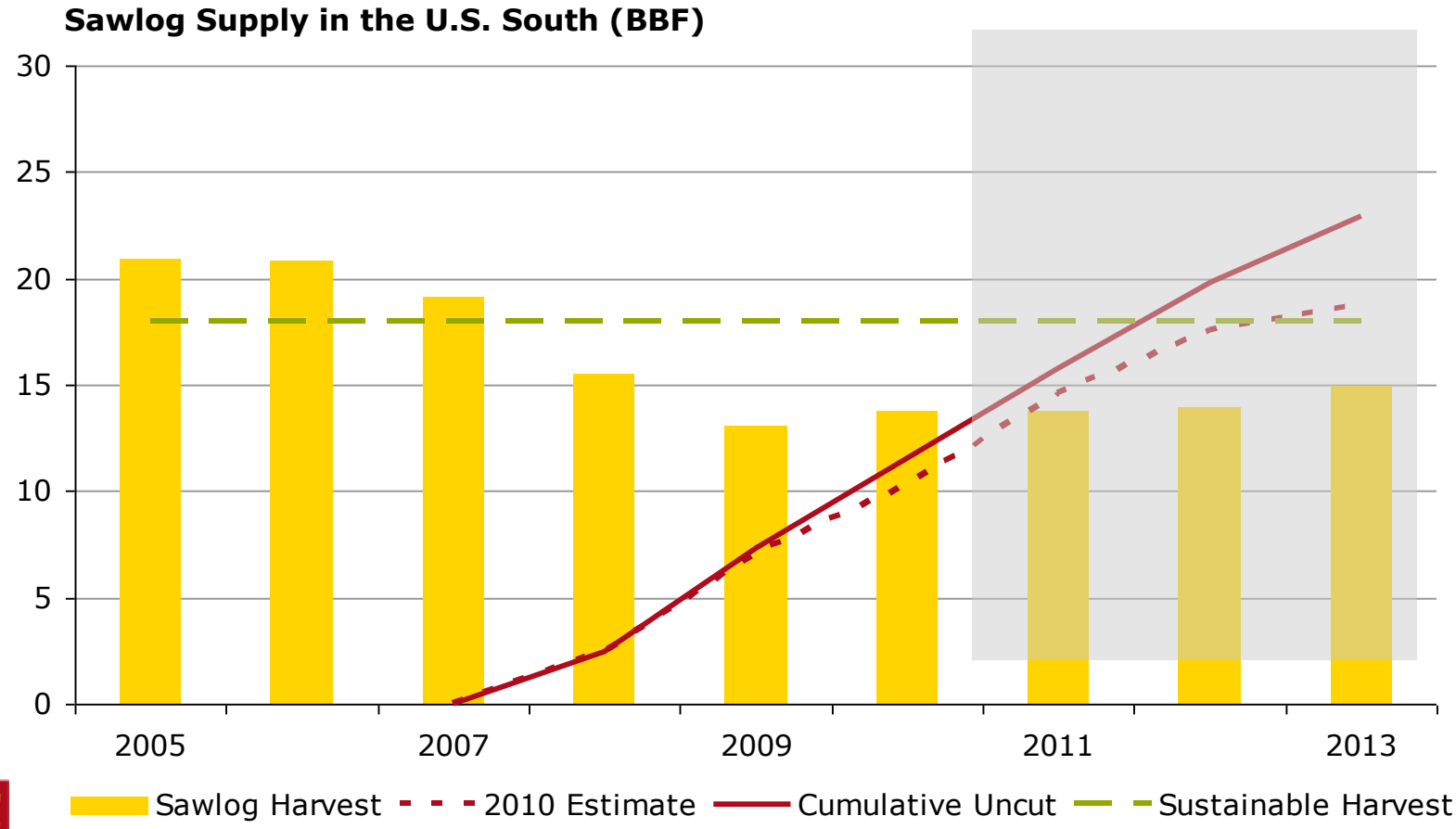
- The delivered cost of sawlogs typically accounts for ~70% of the variable cost of producing lumber.
- Since the mid-2000's, sawlog prices have fallen in N. America and risen off-shore. As a result, the relative cost position of N. American sawmills has generally improved



Source: RISI Inc., * Based on average of first two quarters.

- The inventory of sawlogs in the US South has been expanding, setting the stage for a good supply response to a recovery. It is the single largest lumber producing region in N. America.

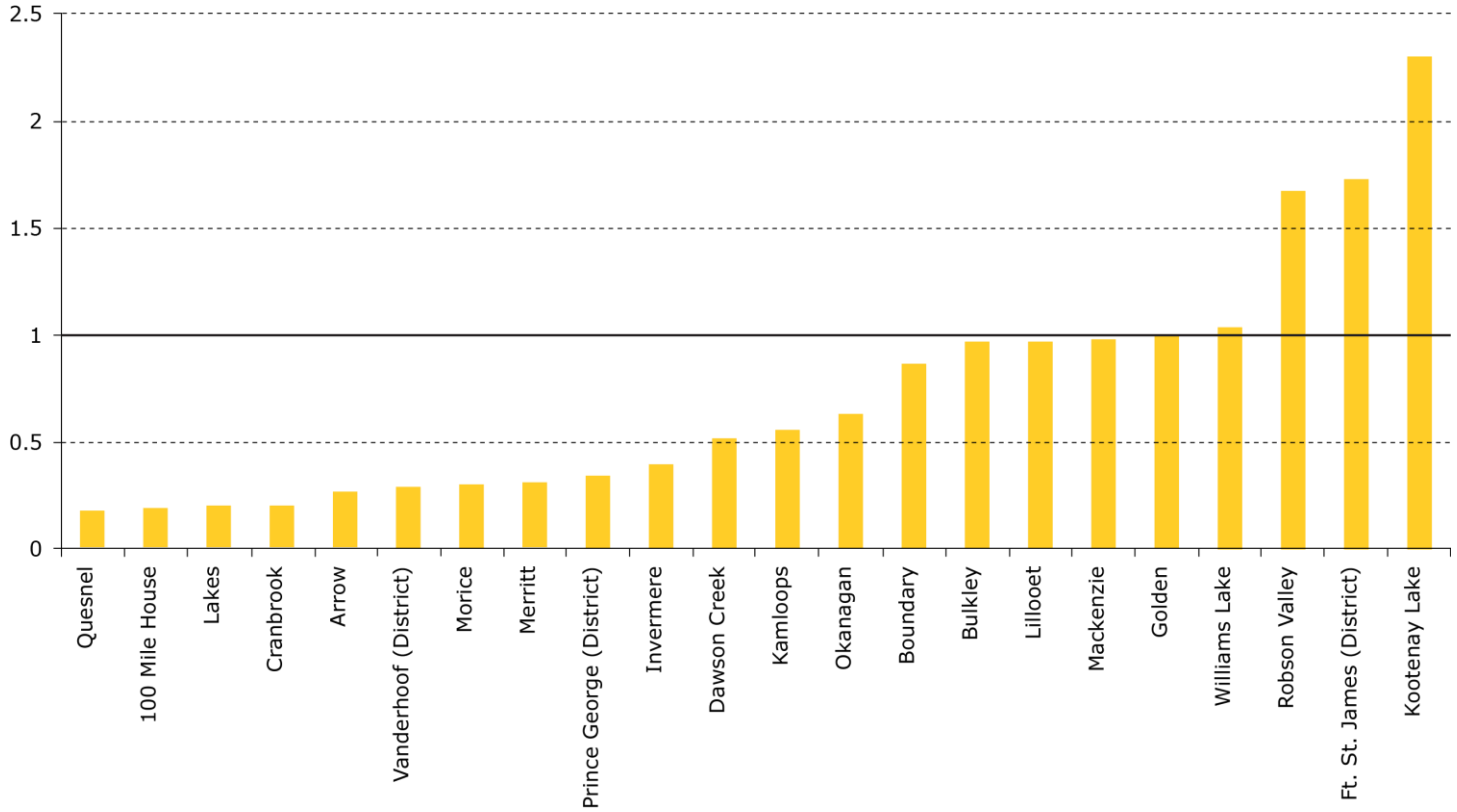
- The increase in inventory reflects historical plantings & more recent undercutting due to the recession



Source: RISI Inc.

- However, the Mountain Pine Beetle infestation will limit the lumber supply response from many sawmills in the B.C. Interior.
  - Eg., Sawlog supply in the Prince George F.D. is estimated to drop from ~12.5 to ~4 million m3, while sawmilling capacity is at ~11 million m3

2015E Ratio of Post-MPB Sawlog Supply to Sawmill Demand, By Forest District in B.C.[1]



(1) Forest Industry Analysis, CIBC