



Canadian Wood Pellet Marketing and Logistics

AEBIOM European Bioenergy Conference
Brussels, Belgium

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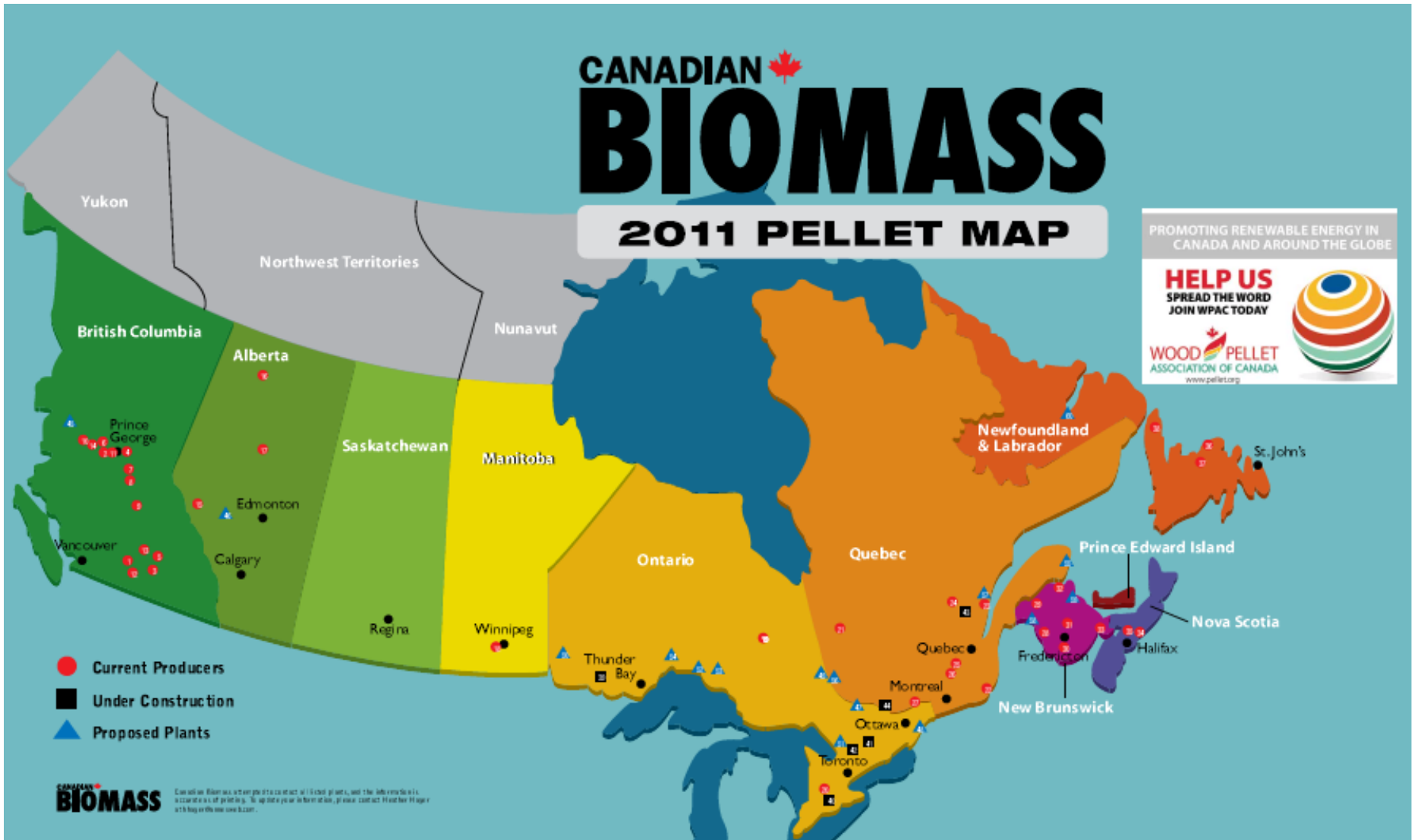




Presentation Overview

- Canadian wood pellet industry
- Logistics
- Markets
- Fibre supply
- Trading
- Canadian initiatives







Canadian annual pellet production capacity as of June 1, 2011 – tonnes

| | Plants | Average | Largest | Total | % |
|-------------------|---------------|----------------|----------------|--------------|----------|
| Western Canada | 16 | 118,000 | 400,000 | 1,889,000 | 64% |
| Eastern Canada | 21 | 58,000 | 130,000 | 1,042,000 | 36% |
| All of Canada | 37 | 79,000 | 400,000 | 2,931,000 | 100% |

New Capacity 2010-11

| | Name | City | Province | New Capacity (tonne/yr) |
|----|-------------------------------|-----------------|----------|----------------------------|
| 1 | Northwest Wood Preservers | Vanderhoof | BC | 30,000 |
| 2 | Pacific BioEnergy | Prince George | BC | 180,000 |
| 3 | Pinnacle Pellet - Burns Lake | Burns Lake | BC | 400,000 |
| 4 | Firemaster | Kamloops | BC | 30,000 |
| 5 | Highland Pellet Manufacturing | Merritt | BC | 29,000 |
| 6 | Tahtsa Pellet | Burns Lake | BC | 30,000 |
| 7 | Groupe Savoie | St-Quentin | NB | 55,000 |
| 8 | Holson Forest Products | Roddickton | NL | 50,000 |
| 9 | Granulco | Sacre-Coeur | QC | 20,000 |
| 10 | Granules de la Mauricie | Shawinigan-Sud | QC | 22,000 |
| 11 | Trebio | Portage-du-Fort | QC | 130,000 |
| | | | | 976,000 |



Western Canadian Plants

- Mostly overseas export focussed
- Pellets loaded on rail cars at plant site
- Rail to Vancouver or Prince Rupert
- Unloading and temporary storage at terminal
- Bulk carrier to Europe or Asia





Eastern Canadian Plants

- Domestic and NE US focussed
- Small plants and high fibre cost
- 1 million tonnes capacity competing for 100,000 tonnes market – mostly bags
- Just 3 of 21 plants shipping overseas from Halifax and Belledune
- Opportunity for EU utilities





Canadian pellet shipments – tonnes*

| | 2010 | 2011F |
|---------------|-----------|-----------|
| Europe | 1,350,000 | 1,700,000 |
| North America | 90,000 | 190,000 |
| Japan | 60,000 | 60,000 |
| Korea | 0 | 50,000 |
| | 1,500,000 | 2,000,000 |

*estimates only – Statistics Canada does not track wood pellets as a separate product and producers are reluctant to share data

Canadian pellet shipping routes



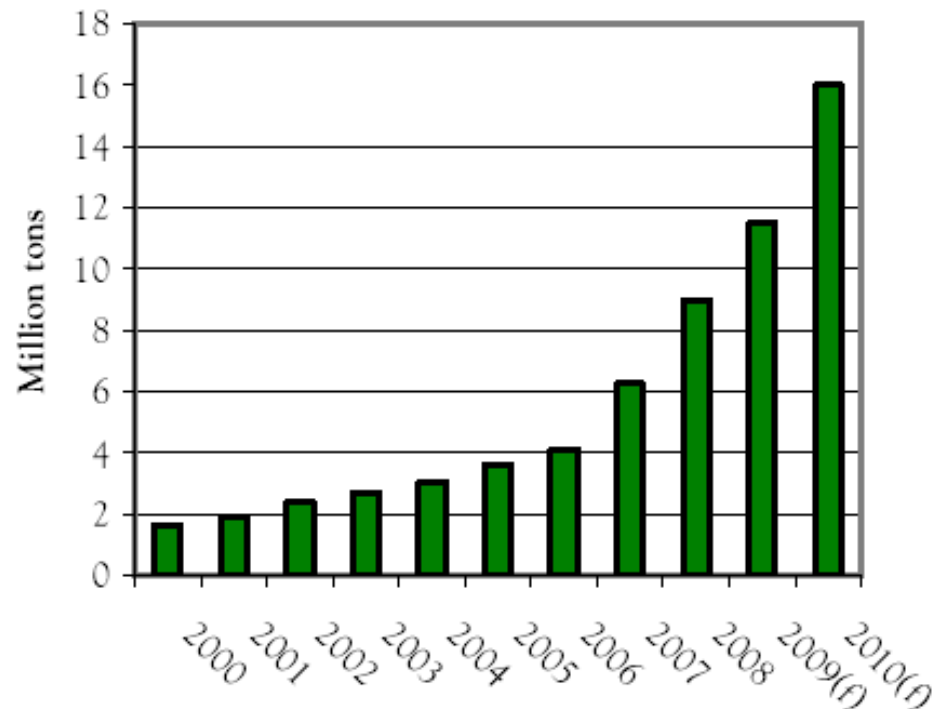


Global Wood Pellet Consumption 2010

- Europe ~ 10 million tonnes
- All other ~ 2 million tonnes

Global Wood Pellet Production

Source: FAO & UNECE
(as of 2009)





European markets for Canadian pellets

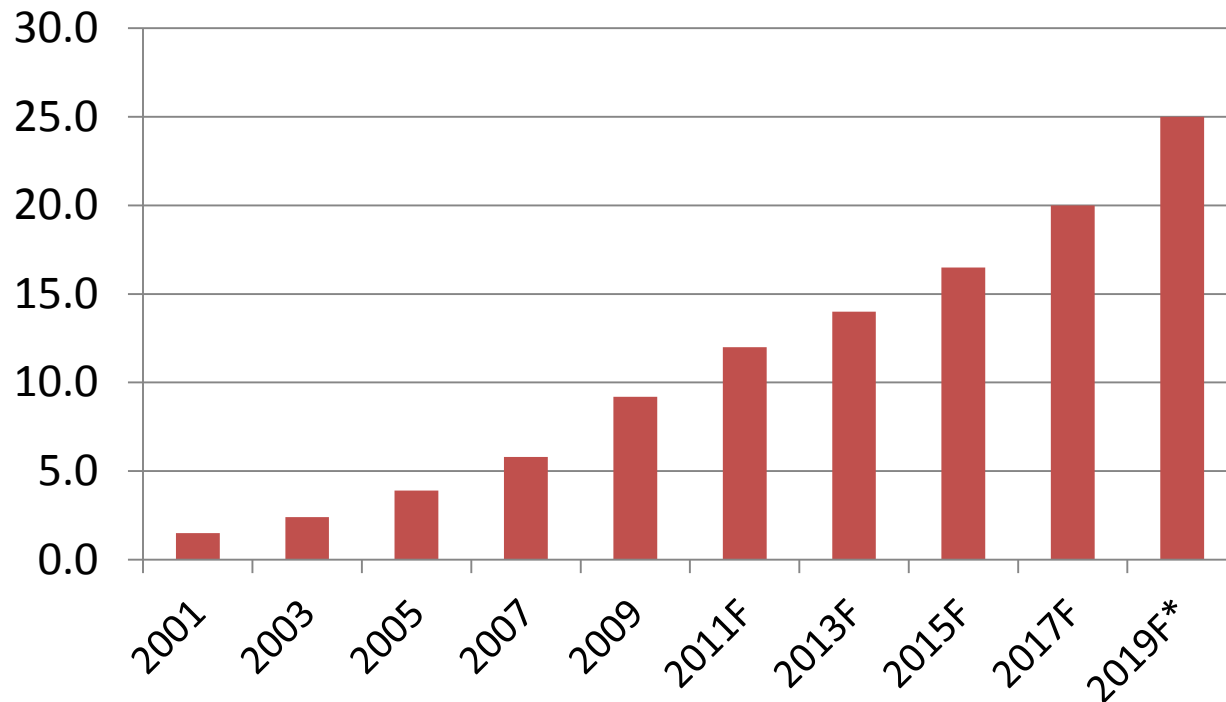
- Belgium – power generation
- The Netherlands – power generation
- United Kingdom – power generation
- Denmark – power/district heating
- Italy – residential heating
- Canadian market share in Europe ~ 15%





Estimating European wood pellet demand

millions of tonnes



*Some experts forecast more than 50 million tonnes for 2020



Forecasting European consumption is difficult

Known:

- 20-20-20 targets
- National action plans



Unknown:

- National renewable energy support schemes
- Will pressure on national governments to reduce deficits result in loss of renewable energy subsidies?



Wood pellet economics as of May 2011*

| | | |
|-----------------------------------|------------------|---------|
| Coal | euro/MWh cif ARA | € 12.32 |
| Carbon emissions | euro/MWh coal | 5.72 |
| Combustion efficiency adjustment | euro/MWh biomass | -1.98 |
| | | 16.06 |
| Wood pellets | euro/MWh cif ARA | 27.36 |
| Spread to be bridged by subsidies | euro/MWh cif ARA | € 11.30 |

*Source: *Forest Energy Monitor*, published by Hawkins Wright



European Renewable Energy Subsidies

- Currently pellets require subsidies to be economic
- Reason: coal is subsidized since environmental costs are not factored into coal prices
- Renewable energy subsidy requirement could disappear in 2013 with 3rd ETS trading period since more than half of EUA's will be auctioned



European Industrial Wood Pellet Buyers Group

- Dong, Drax, Electrabel, EON, Fortum, RWE, Vattenfall
- Holding private meetings since June 2010.
- Planning to impose on producers:
 - Standard contracts
 - Universal product standards
 - Mandatory sustainability criteria
- Why have producers¹⁶ been excluded to date?





Evolution of European Pellet Trading

- Spot bilateral trades between known counterparties
- Long term bilateral contracts
- Commodities exchange and forward contracts
 - Standard contracts and product specifications
 - Purpose: risk management
 - Enables hedging and enhanced liquidity
 - Requires regulation to prevent manipulation



APX-ENDEX & Port of Rotterdam Plans*

- Biomass exchange – starting with pellets in 2011
- Trade for 5 hours twice weekly
- 9 contracts per session: 3 month, 3 quarters, 3 years
- Initially non-cleared – counterparties made known to each other at conclusion of trade
- Physically settled (as opposed to cash settlement)
- Strict sustainability criteria

*Source: Hawkins Wright

apx endex





North American Market Situation

- Power markets presently non-existent
- Heat market – currently ~ 1.6 million tonnes
- Heat markets generally: natural gas is cheapest, then pellets, then oil, then electricity
- Pellets are cost competitive in areas not served by natural gas – remote areas, Atlantic Canada, Northeast US



North American Pellet Market Potential

- US annual coal consumption: 1 billion tonnes
- Canada annual coal: 60 million tonnes
- NA: At 5% co-firing: 50 to 70 million tonnes pellets
- Unfortunately no political support for co-firing





South Korean Market Situation

- Committed to 30% GHG by 2020
- RPS for power generation: 2012 – 2%
- Increase $\sim \frac{1}{2}\%$ annually until 2022 – 10%
- Biomass energy target for 2020: 4,211,000 toe
- Pellet equivalent: 10 million tonnes





12 Korean Utilities Subject to RPS

Korea Hydro & Nuclear

Korea Water Resources

Korea Southeast Power

Posco Power

Korea Midland Power

K-Power

Korea Western Power

GS EPS

Korea Southern Power

GS Power

Korea District Heat

Maiya Yulchon + Hyundai
Daesan



Canada's Forests

- 397 million hectares
- 10% of the world's forest
- Sustainably managed
- 149 million hectares certified by CSA, SFI, or FSC
- 93% is publicly owned—access via licences
- 208 million m³ annual harvest





Pellet Fibre Sources

- Wood residues: sawdust, shavings, harvest waste
- Approximately 2 tonnes green fibre equals 1 tonne wood pellets
- 2011: 4 million tonnes green fibre to make 2 million tonnes pellets





Fibre Availability

- Annual Canadian timber harvest ~ 200 million tonnes
- Ratios: lumber ~ 50%; pulp chips ~ 30%; other residues ~ 20%
- Annual residues: 40 million tonnes





Fibre Available for Pellets

- Annual residues: 40 million tonnes
- Say ~ 50% used for pulp and paper co-generation
- Leaves 20 million tonnes for wood pellets
- Currently using 4 million tonnes (2011)





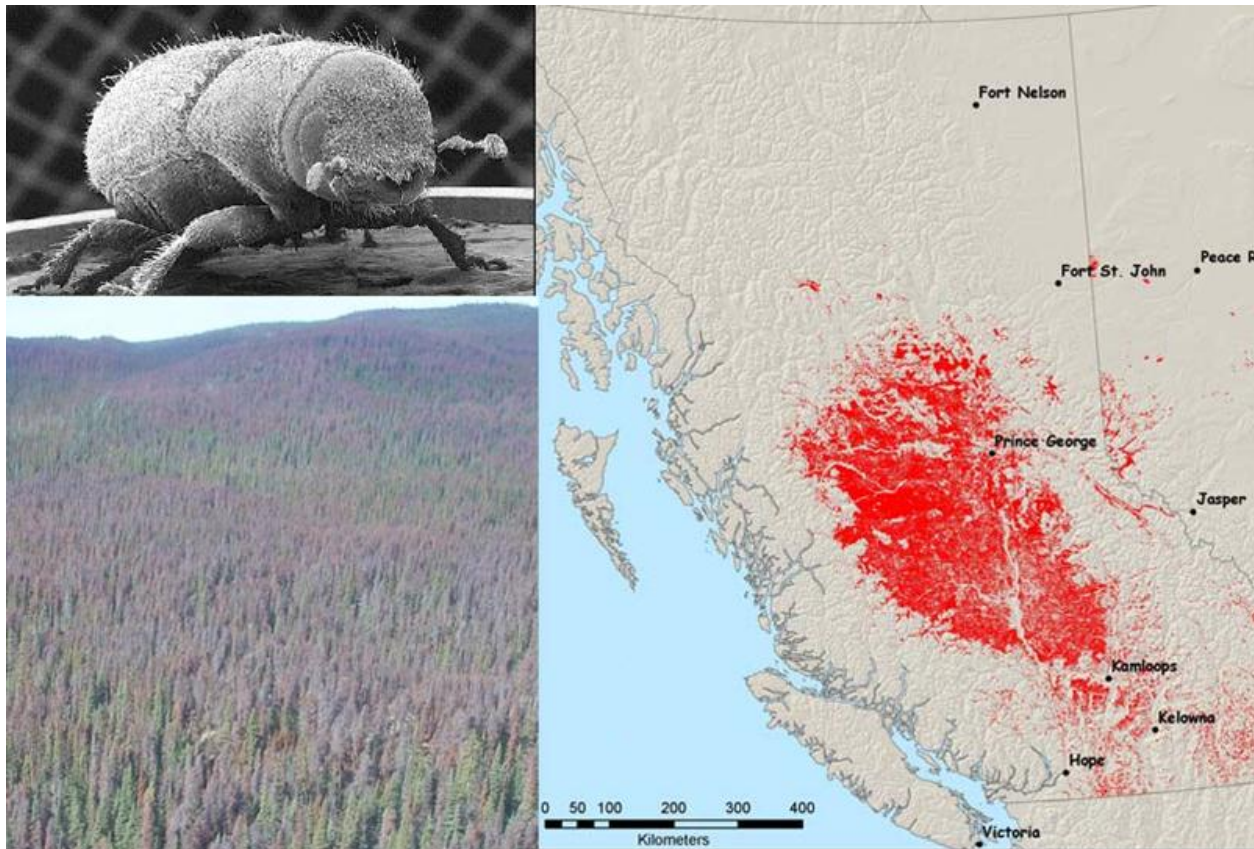
BC Mountain Pine Beetle Infestation

- Cumulative affected area in BC – 16.3 million hectares (source BC Min. of Forests)
- Infestation is half the size of Germany
- 675 million cubic metres of dead timber
- Access mainly by agreement with sawmills, BC Timber Sales, and First Nations





Scope of BC Infestation





Canadian Initiatives

- Torrefaction
- Product Certification
 - Adopt new PFI standards for North American market
 - Adopt EN plus for European market
- Sustainability certification
- Safety certification



Questions?



There are
NO STUPID QUESTIONS
or stupid answers.