Canadian Pellet Industry Update

Pellet Fuel Institute Annual Conference
July 20, 2015 | Williamsburg, VA

John Arsenault, Director | Market access and promotion, WPAC
Topics

- World markets
- Canadian exports
- Canadian production
- Canadian pellet consumption
- Pellet market opportunities & challenges
Good Pellet Weather?
http://www.ncdc.noaa.gov/sotc/global/201503

Land & Ocean Temperature Departure from Average Jan–Mar 2015
(with respect to a 1981–2010 base period)

-4-5 °C          +3+4 °C

Data Source: GHCN-M Radiation 3.0.6 & FRSST version 3b

NOAA’s National Climatic Data Center
Tue Apr 14 12:31:32 EDT 2015

Please Note: Gray areas represent missing data
Map Projection: Robinson

Wood Pellet Association of Canada
Global Demand Outlook to 2025

In our central scenario we expect the market will more than double by 2025 with demand for industrial pellets being the main driver.

Source: Silvio Mergner, Poyry
European Heat Market Growth (tonnes)

Source: Gilles Gauthier, European Pellet Council
European Growth of ENplus Certification (thousand of tonnes)

60% of all heating pellets are now ENplus certified

Source: EPC
Canadian Export Destinations – Volumes

Source: Stats Canada

FIBER?
## Canadian Export Destinations – Volume and prices (2015 YTD May)

**Top 10 countries for year-to-date 2015 to which we exported trade commodity "440131 Wood pellets" from "Canada", custom basis, 6 digit commodity level**

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</thead>
<tbody>
<tr>
<td>1</td>
<td>United Kingdom</td>
<td>489,879,154</td>
<td>77,089,850</td>
<td>982,803,144</td>
<td>149,760,584</td>
<td>1,026,526,570</td>
<td>149,707,952</td>
<td>794,379,153</td>
<td>116,859,288</td>
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<tr>
<td>2</td>
<td>United States</td>
<td>74,265,846</td>
<td>19,589,566</td>
<td>218,889,222</td>
<td>50,897,513</td>
<td>152,271,441</td>
<td>32,177,262</td>
<td>86,665,148</td>
<td>18,180,342</td>
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<tr>
<td>3</td>
<td>Italy</td>
<td>32,299,827</td>
<td>5,463,725</td>
<td>204,528,467</td>
<td>38,559,233</td>
<td>219,551,041</td>
<td>40,105,839</td>
<td>85,237,666</td>
<td>14,308,893</td>
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<tr>
<td>4</td>
<td>Korea, South</td>
<td>29,187,438</td>
<td>4,990,644</td>
<td>150,003,940</td>
<td>22,443,229</td>
<td>113,077,437</td>
<td>18,053,724</td>
<td>2,083,648</td>
<td>458,753</td>
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<tr>
<td>5</td>
<td>Japan</td>
<td>25,466,424</td>
<td>4,804,725</td>
<td>61,807,302</td>
<td>11,197,791</td>
<td>76,018,205</td>
<td>12,481,791</td>
<td>105,640,409</td>
<td>15,707,588</td>
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<tr>
<td>6</td>
<td>Singapore</td>
<td>270,126</td>
<td>72,454</td>
<td>705,037</td>
<td>202,445</td>
<td>747,258</td>
<td>205,197</td>
<td>589,080</td>
<td>164,592</td>
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<tr>
<td>7</td>
<td>Taiwan</td>
<td>98,135</td>
<td>35,923</td>
<td>273,511</td>
<td>83,096</td>
<td>229,766</td>
<td>76,981</td>
<td>200,676</td>
<td>62,061</td>
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<tr>
<td>8</td>
<td>Bahrain</td>
<td>101,600</td>
<td>23,572</td>
<td>152,400</td>
<td>36,118</td>
<td>102,036</td>
<td>17,996</td>
<td>0</td>
<td>0</td>
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<tr>
<td>9</td>
<td>Malaysia</td>
<td>40,347</td>
<td>15,399</td>
<td>25,206</td>
<td>6,858</td>
<td>87,712</td>
<td>25,731</td>
<td>0</td>
<td>0</td>
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<tr>
<td>10</td>
<td>Hong Kong</td>
<td>31,974</td>
<td>9,529</td>
<td>12,236</td>
<td>3,693</td>
<td>49,428</td>
<td>15,235</td>
<td>25,489</td>
<td>7,852</td>
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http://www5.statcan.gc.ca/cimt-cicm/topNCountries-pays?countryId=0&tradeType=1&scaleQuantity=0&usaState=0&dataTransformation=0&save=null&topNDefault=10&freq=12&lang=eng&refYr=2015&country=null&sectionId=9&scaleValue=0&chapterId=44&monthStr=null&arrayId=0&sectionLabel=&retrieve=Extrait&provId=1&refMonth=12&commodityId=440131
Canadian Exports to Asia (tonnes)

Source: Statistics Canada

<table>
<thead>
<tr>
<th>Year</th>
<th>Japan</th>
<th>South Korea</th>
</tr>
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<tbody>
<tr>
<td>2012</td>
<td>105640</td>
<td>2084</td>
</tr>
<tr>
<td>2013</td>
<td>113077</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>61807</td>
<td>150004</td>
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</table>

Source: Statistics Canada
Canadian Annual Domestic Wood Pellet Consumption - tonnes

1. Calculated using data from Stats Canada & HPBA Canada & NWT Biomass & Energy Association
2. Approximately 200,000 tonnes for all of Canada annually
Canadian Annual Domestic Wood Pellet Consumption – tonnes/1000

1. Calculated using data from Stats Canada & HPBA Canada
Canadian pellet plants

More projects!

More construction!

A few closures!

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Export terminals
Panamax Ready!

Existing: Vancouver, Halifax, Belledune, Trois-Rivières, Montréal
New:

Quebec Stevedores
75000 tonnes
Quebec City

Westview Pellet Terminal
60000 tonnes (Phase 1)
Prince Rupert BC
Power Generation conversion (OPG)
Attikokan 200MW power plant (90Kmt/yr)
Power Generation conversion (OPG)
Thunder Bay 150MW power plant (6Kmt/yr)
## Black or White?

<table>
<thead>
<tr>
<th>Conversion parameters</th>
<th>Attikokan White</th>
<th>Thunder Bay Black</th>
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<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>205 MWe</td>
<td>150</td>
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<tr>
<td><strong>Use Factor</strong></td>
<td>80%</td>
<td></td>
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<tr>
<td><strong>Tonnes used</strong></td>
<td>738345 Tonnes</td>
<td>488301 Tonnes</td>
</tr>
<tr>
<td><strong>Conversion Costs</strong></td>
<td>$170,000,000</td>
<td>$5,000,000</td>
</tr>
<tr>
<td><strong>Annual Costs</strong></td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Per MWe</td>
<td>$8,28</td>
<td>$0,33</td>
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<tr>
<td><strong>Conv. Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per tonne</td>
<td>$16,12</td>
<td>$0,72</td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per tonne</td>
<td>$10,00</td>
<td>$10,00</td>
</tr>
<tr>
<td>Per MWe</td>
<td>$5,14</td>
<td>$4,65</td>
</tr>
<tr>
<td><strong>Savings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per tonne</td>
<td></td>
<td>$18,18</td>
</tr>
<tr>
<td>Per MWe</td>
<td></td>
<td>$8,44</td>
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<tr>
<td><strong>Outage</strong></td>
<td>18 months</td>
<td>7</td>
</tr>
<tr>
<td><strong>Downtime costs</strong></td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
Sustainable Biomass Partnership

Partners

DONG Energy
Drax
EON

GDF Suez
Vattenfall
RWE

“Participating Observers”
EIPS, USIPA, & WPAC
Conclusions

- The general market outlook is positive
- Europe is still major export market
- USA is now more attractive for Canadian producers, mostly currency related
- Fiber and sustainability are key issues
- North America will grow slowly
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