Wood Pellet Market Development in South Korea

By Lee Brothers & Co., Ltd.

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About Lee Brothers

- **Company founding:** 1955 (in Hong Kong)

- **Specializing in forest products marketing**
  - Sourcing newsprint for the Korean market in the beginning
  - Selling wood pulps to the Korean paper industry
  - Introduction of magazine (light weight coated) papers from the mid 1980’s
  - Selling SPF dimension lumber, treated wood, and OSB to the Korean wood-frame construction market from the mid 1990’s

- **Current activities:** Marketing agent
  - Bleached softwood kraft pulp (Canfor Pulp Limited Partnership)
  - Unbleached kraft pulp (Canfor Pulp Limited partnership)
  - BCTMP (Millar Western Forest Products)
  - High performance packaging papers (Premium 1 Papers)
  - SPF dimension lumber (Canfor Wood Products Marketing)
  - Eucalyptus log/lumber (Urufor S. A.)
Korean Energy and GHG Situation

- World’s 10th largest energy consumer
  - 96% of energy consumed is imported, 29% of total import
  - US$118.3 billion energy import in 2007
  - 5th largest crude oil importer
  - 2nd largest coal importer

- Fast increase in CO₂ emission
  - 1st in CO2 emission rate of increase among OECD nations
  - 9th largest CO2 emission in the world (620 million tons in 2007)
Korean Energy Strategy - Basic Direction

- Implementation of “low-carbon, Green Growth,” and Creation of “new growth engines” and jobs from “Green Technology” and clean energy

- Promotion of energy security, energy efficiency, and eco-friendly strategy to support sustained economic growth and future generations’ energy need
Korean Energy Strategy - ‘Vision 2030’

<table>
<thead>
<tr>
<th>5 Visions</th>
<th>Index</th>
<th>2006</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of energy independent society</td>
<td>Self-sufficiency</td>
<td>3.2%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>Renewable energy</td>
<td>2.2%</td>
<td>11%</td>
</tr>
<tr>
<td>Conversion to lower energy consuming Society</td>
<td>TOE</td>
<td>0.347</td>
<td>0.185</td>
</tr>
<tr>
<td>Conversion to oil-free Society</td>
<td>Fossil fuel dependency</td>
<td>43.6%</td>
<td>33%</td>
</tr>
<tr>
<td>Implementation of a society living together</td>
<td>Energy poverty</td>
<td>7.8%</td>
<td>0%</td>
</tr>
<tr>
<td>Creation of new growth engines and jobs from Green Technology and clean energy</td>
<td>Level of energy technology</td>
<td>60%*</td>
<td>Top</td>
</tr>
</tbody>
</table>

* Advanced nations – 100 basis
Conversion to Lower Energy Consumption
(47% Improvement in 2030 TOE Target)

- System Construction for Sustainable Efficiency Strategies
- Industrial Structure Reorganization
- Energy Cost Structural Reform
- Energy Efficiency Improvement
- Energy Utilization System Reform
- Establishment of Market Structure for Efficient Investment
- Creation of Social Consciousness for GHG Reduction
- Energy Utilization System Reform / Consumption Reduction Promotion
Strategy for Wood Pellet as Energy

**Target**

- **Short-term**
  - 2012 fuel use: Farm homes 4%, Greenhouse 20% Substitution

- **Long-term**
  - 2020 fuel use: Farm homes 16%, Greenhouse 50% Substitution

**Strategy**

- **Systematic Demand creation**
  - Public sector first
  - Farming / mountain homes

- **Secure supply**
  - Establish consistent system regionally
  - Secure stable overseas supply

- **Build foundation**
  - Achieve top-class technology
  - Build conditions for pellet use

**Execution**

Source: Korea Forest Service
Wood Pellet Demand Creation Strategy and Supply plan

Supply from Local production:
- Public sector to lead wood pellet use for generating demand initially.
  Recreation/lodging facilities at KFS owned forest, Arboretum, social welfare institutions, government/public offices, schools, etc.
- Install wood pellet boilers at 140,000 farming/mountain village homes by 2020.
- Replace 20% of fossil fuel with wood pellet at greenhouse horticulture by 2012

Supply from overseas:
- Wood pellet use at power plants to start from 2012 - Renewable Energy Portfolio Standard is to be introduced from 2012
## Wood Pellet Supply Plan

- Maximum, potential local capacity of wood pellet – 1 million tons
- 2020 estimated wood pellet demand – 5 million tons
- Minimum 4 million ton wood pellets should be imported in 2020.
- KFS plans to secure wood pellet supply from Indonesia, New Zealand, and Myanmar by inducing them to install pellet operations. Indonesia is making available 200,000 ha of land for plantation to produce wood pellets for export to Korea, based on the Korea-Indonesia summit meeting (March, 2009).

### Yearly Pellet Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Pellet Plants</th>
<th>Capacity (ton)</th>
<th>Production (ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>11</td>
<td>30,000</td>
<td>8,470</td>
</tr>
<tr>
<td>2011</td>
<td>22</td>
<td>237,000</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Source: Korea Forest Service
Wood Pellet Demand-Supply Projection

Unit: 1,000MT

2011
Demand: 250
Supply: 200

2012
Demand: 500
Supply: 220

2020
Demand: 350
Supply: 400

Household
Green house
Public sector
Power plant
Local production
Import

Source: Korea Forest Service
Wood pellet import by countries

Unit: MT

Source: Korea Customs Service
Average Import Price of Wood Pellet by Key Countries – Year 2010

<table>
<thead>
<tr>
<th>Unit</th>
<th>China</th>
<th>Vietnam</th>
<th>Malaysia</th>
<th>Chile</th>
<th>Canada</th>
<th>Indonesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tons</td>
<td>8,084</td>
<td>4,399</td>
<td>3,264</td>
<td>2,024</td>
<td>1,440</td>
<td>797</td>
</tr>
<tr>
<td>U$1,000</td>
<td>1,244</td>
<td>530</td>
<td>429</td>
<td>359</td>
<td>351</td>
<td>108</td>
</tr>
<tr>
<td>Unit Price</td>
<td>154</td>
<td>120</td>
<td>131</td>
<td>177</td>
<td>244</td>
<td>136</td>
</tr>
</tbody>
</table>

- Higher calorific value could command higher price.
- Vietnamese pellet is reported to be in 4,200 ~ 4,800 CV.
- BC, Canada pellet is reported to be in 4,700 CV.
- Higher priced, cosmetically better looking Canadian pellets have been primarily used for animal bedding so far.
- Challenge for Canada for successful inroads into the Korean market would be how to compete against the lower cost pellet producers in the Southeast Asian countries.
Questions in Logistics

Wood pellets for household, public sector facilities, or commercial greenhouses are all packaged in 25 Kg unit. Since all pellet use in Korea so far has been in these areas, only 25 Kg unit pack has existed for both local and import packaging.

When wood pellets start replacing coal for electricity from 2012, pellet packaging will have to change. For initial trials, container shipping would be suitable. But for larger volume, regular orders, bulk shipping would be most ideal, probably in minimum 50,000 ton loading.

When pellets are shipped in bulk, transportation and storage will be a whole new issue. A close working relationship with customers would be important in problem solving in logistics.

Thank you.