Cement Task Force

Yoshito Izumi, Ph.D.
Taiheiyo Cement Corp.
10 December, 2007
CTF Objectives and Activities

**Objectives:**
- Estimate regional/national reduction potentials
- Identify opportunities and barriers to promote the diffusion of clean technologies

**Activities:**
- **Status Report**
- **Benchmarking**
  - Link with WBCSD “Cement Sustainability Initiative” (CSI) e.g. Performance Indicators, CSI CO₂ protocol
- **Clean Technologies**
  - 10 (incl. 3 flagship) projects endorsed

[http://www.asiapacificpartnership.org/CementProjects.htm#Cement%20Project%20201](http://www.asiapacificpartnership.org/CementProjects.htm#Cement%20Project%20201)
Status Report
Highlighting results in China

- Cement production 1.24bt in 2006 (world top), 71% increase since 2002

- Old manufacturing process (shaft kiln) still have a large share

<table>
<thead>
<tr>
<th>Kiln Type</th>
<th>No. of Companies</th>
<th>No. of Kilns</th>
<th>Clinker Production Capacity, 10^3 t/y</th>
<th>Cement Production Capacity, 10^3 t/y</th>
<th>Clinker Production Capacity/kiln, 10^3 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Dry Type</td>
<td>109</td>
<td>187</td>
<td>170,193.4</td>
<td>197,256.7</td>
<td>910.1</td>
</tr>
<tr>
<td>Vertical Shaft</td>
<td>11</td>
<td>24</td>
<td>2,098.0</td>
<td>2,678.0</td>
<td>87.4</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>211</td>
<td>172,291.4</td>
<td>199,934.7</td>
<td>816.5</td>
</tr>
</tbody>
</table>
Status Report
Highlighting results in China

- Production from new dry kiln 50%, 34% increase since 2002

- Average energy consumption is still high (specific energy consumption 142 kg-standard coal/t, 15% improvement since 2002)

### Coal and Electricity Consumption Data of Companies Surveyed (1)

<table>
<thead>
<tr>
<th>Energy Consumption Indicators</th>
<th>Unit</th>
<th>New Dry Type Kilns</th>
<th>Vertical Shaft Kilns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>Advanced level</td>
</tr>
<tr>
<td>Standard coal consumption/clinker</td>
<td>kg/t-clinker</td>
<td>118.68</td>
<td>90 - 100</td>
</tr>
<tr>
<td>Electricity consumption/clinker</td>
<td>kWh/t-clinker</td>
<td>65.14</td>
<td>25 - 30</td>
</tr>
<tr>
<td>Electricity consumption/cement</td>
<td>kWh/t-cement</td>
<td>96.57</td>
<td>30 - 45</td>
</tr>
</tbody>
</table>
Key Actions among APP Countries

**Clean Technologies**

- Diffusion of Best Practices & New Clean Technologies
  - Center of Excellence (Beijing)
  - Demonstration Projects
  - Best Practices
  - Capacity Building
  - New Clean Technologies
  - Cement factories in APP countries

**Benchmarking**

- Set National Benchmark
  - Estimate Emissions Reduction Potentials
  - Identify Barriers

- Review the Benchmark Periodically

- CO₂
**Indicators for benchmarking**

*All Parties will calculate indicator for CO₂ emissions using the CSI CO₂ Protocol*

Cement-based CO₂ emission intensity (net) [kg-CO₂/t-cementitious]

Net: excluding CO₂ from alternative fuels

**Voluntary indicator:**

Total energy intensity for clinker (net) or Thermal Energy (net) and Power intensity for clinker [MJ/t-clinker]

Net: excluding alternative and biomass fuels
Establish the “mean value” of the CO$_2$ emissions intensity (net) as a national benchmark in each Party.

Each Party will identify potential barriers of viability of reduction rate.
Example of Barriers

**Energy efficiency**
- Economic Viability

**Alternative Fuels**
- Economic Viability
- Regulations
  - [e.g. use of waste plastic is restricted in the cement kiln due to material recycle priority]
- Geography

**Clinker / Cement ratio**
- Customer demand
- Standards
# Action Plans for Clean Technologies

<table>
<thead>
<tr>
<th>Cement TF Projects</th>
<th>2007</th>
<th>08</th>
<th>09</th>
<th>2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre of Excellence (at China Building Materials Academy, Beijing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kiln Co-generation (demonstration project)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazardous Wastes, Co-processing &amp; Management</td>
<td></td>
<td></td>
<td></td>
<td>Flagship project</td>
</tr>
<tr>
<td>High-energy Biomass Fuels (demo. project)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete as CO2 Sink (demo. project)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance Diagnosis</td>
<td></td>
<td></td>
<td></td>
<td>Flagship project</td>
</tr>
</tbody>
</table>

- Flagship project
- 1<sup>st</sup> CSI CO<sub>2</sub> Protocol Training Program
Thank you for your attention

http://asiapacificpartnership.org/CementTF.htm