APEC Energy Overview

APERC Workshop at EWG 34

Hong Kong, China
4 September, 2007

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Asia Pacific Energy Research Centre
Outline

- Background
- Scope of Work/Task Sharing
- Format and Content
- APEC Economic Profile
- APEC Energy Profile
- Notable Energy Developments
Background

- The project was proposed at the 11th EGEDA Meeting held on 6-7 March 2000, Tokyo, Japan.

- The project was approved at the 19th EWG meeting held in Brunei Darussalam, 6-7 April 2000.
• First proposed at the 11th EGEDA Meeting, Tokyo, Japan

• Endorsed and Approved at the 19th EWG Meeting, Brunei Darussalam

• Inaugural Issue

• 2nd Edition

• 3rd Edition

• 4th Edition

• 5th Edition

• 6th Edition

(APEC Energy Overview 2006)
Scope

- Annual publication of up-to-date energy trend analysis for the APEC region

- Provision of an overview for recent and notable energy developments in the 21 APEC member economies
Task Sharing

EDMC, IEEJ
- To prepare the summary of energy demand and supply data, based on the APEC Energy Database

APERC
- To coordinate information gathering from the member economies
- To prepare drafts of Overview for EGEDA review
- To finalise the Overview and submit it to the EWG
Contents of the Overview 2006

- Introduction
  - Key data and economic profile (2004), energy reserves
- Energy Supply and Consumption for 2004
  - Primary Energy Supply
  - Final Energy Consumption
- Policy Overview
  - Energy Policy Goals, Objectives and Strategies
  - Recent Energy Policy Changes or Energy Infrastructure Developments
GDP in APEC (2003-2004)

GDP by Region (2003-2004)

<table>
<thead>
<tr>
<th>Region</th>
<th>2000 US$, Billions, PPP</th>
<th>AAG 2003-2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>APEC</td>
<td>27,801 29,406</td>
<td>5.8%</td>
</tr>
<tr>
<td>North America</td>
<td>11,051 11,504</td>
<td>4.1%</td>
</tr>
<tr>
<td>Latin America</td>
<td>1,194 1,249</td>
<td>4.6%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>4,725 4,889</td>
<td>3.5%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>2,017 2,141</td>
<td>6.1%</td>
</tr>
<tr>
<td>Oceania</td>
<td>641 661</td>
<td>3.2%</td>
</tr>
<tr>
<td>China</td>
<td>6,954 7,656</td>
<td>10.1%</td>
</tr>
<tr>
<td>Russia</td>
<td>1,219 1,306</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

Source: APERC (2007)

Incremental Growth of GDP by Region (2003-2004)

China accounted for 44% of incremental growth in APEC GDP.
### Total Primary Energy Supply in APEC (2003-2004)

#### TPES by Region (1990, 2003 and 2004)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>APEC</td>
<td>3,655</td>
<td>5,710</td>
<td>6,075</td>
<td>6.4%</td>
</tr>
<tr>
<td>North America</td>
<td>2,070</td>
<td>2,544</td>
<td>2,597</td>
<td>2.1%</td>
</tr>
<tr>
<td>Latin America</td>
<td>144</td>
<td>195</td>
<td>206</td>
<td>5.4%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>579</td>
<td>815</td>
<td>853</td>
<td>4.7%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>139</td>
<td>314</td>
<td>354</td>
<td>12.7%</td>
</tr>
<tr>
<td>Oceania</td>
<td>103</td>
<td>132</td>
<td>136</td>
<td>2.7%</td>
</tr>
<tr>
<td>China</td>
<td>621</td>
<td>1,089</td>
<td>1,288</td>
<td>18.3%</td>
</tr>
<tr>
<td>Russia</td>
<td>-</td>
<td>620</td>
<td>641</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

#### Incremental Growth of TPES by Region (2003-2004)

- **NA**: North America
- **LA**: Latin America
- **NEA**: Northeast Asia
- **SEA**: Southeast Asia
- **OCE**: Oceania
- **PRC**: People's Republic of China
- **RUS**: Russia

**Source:** APERC (2007)
Total Primary Energy Supply by Fuel and by Region (2003-2004)


<table>
<thead>
<tr>
<th></th>
<th>Mtoe</th>
<th>AAG</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1995</td>
<td>2003</td>
</tr>
<tr>
<td>Oil</td>
<td>1,864</td>
<td>2,109</td>
</tr>
<tr>
<td>Coal</td>
<td>1,433</td>
<td>1,706</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>1,095</td>
<td>1,250</td>
</tr>
<tr>
<td>Others</td>
<td>584</td>
<td>644</td>
</tr>
<tr>
<td>TPES</td>
<td>4,976</td>
<td>5,710</td>
</tr>
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</table>

Incremental Growth of TPES by Fuel and by Region (2003-2004)

Source: APERC (2007)


<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>APEC</td>
<td>5,183</td>
<td>5,497</td>
<td>6.1%</td>
</tr>
<tr>
<td>North America</td>
<td>2,019</td>
<td>2,041</td>
<td>1.1%</td>
</tr>
<tr>
<td>Latin America</td>
<td>260</td>
<td>272</td>
<td>4.4%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>128</td>
<td>149</td>
<td>16.3%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>370</td>
<td>401</td>
<td>8.5%</td>
</tr>
<tr>
<td>Oceania</td>
<td>270</td>
<td>278</td>
<td>2.9%</td>
</tr>
<tr>
<td>China</td>
<td>1,049</td>
<td>1,198</td>
<td>14.2%</td>
</tr>
<tr>
<td>Russia</td>
<td>1,087</td>
<td>1,159</td>
<td>6.6%</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>APEC</td>
<td>466</td>
<td>601</td>
<td>675</td>
<td>12.4%</td>
</tr>
<tr>
<td>North America</td>
<td>231</td>
<td>536</td>
<td>580</td>
<td>8.3%</td>
</tr>
<tr>
<td>Latin America</td>
<td>-64</td>
<td>-63</td>
<td>-63</td>
<td>0.0%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>474</td>
<td>704</td>
<td>735</td>
<td>4.3%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>-53</td>
<td>-32</td>
<td>-26</td>
<td>-16.4%</td>
</tr>
<tr>
<td>Oceania</td>
<td>-72</td>
<td>-136</td>
<td>-139</td>
<td>2.4%</td>
</tr>
<tr>
<td>China</td>
<td>-49</td>
<td>47</td>
<td>100</td>
<td>112.9%</td>
</tr>
<tr>
<td>Russia</td>
<td>-</td>
<td>-455</td>
<td>-511</td>
<td>12.2%</td>
</tr>
</tbody>
</table>

Source: APERC (2007)
Notable Energy Developments

- Enhancement of Energy Security
  - Energy Efficiency Improvement
  - Infrastructure Development
  - Energy Source Diversification
  - Upstream Development
- Regulatory Reform
- Environmental Protection
Energy Efficiency Improvement

- **Australia**
  - Energy Efficiency Opportunities Act 2006 and Regulation 2006 to encourage large energy users to take a more rigorous approach to energy management

- **China**
  - Ten key projects for energy launched
    - Target to save 240 million tonnes of coal equivalent
  - Top-1000 Enterprise Energy Conservation Action Plan launched
    - Target to save 100 million tce by 2010

- **Hong Kong, China**
  - Issue of labels for 2,960 appliances.

- **Indonesia**
  - Biofuels programme initiated.

- **Japan**
  - New Energy Strategy calls for another 30 percent improvement of energy intensity by 2030.

- **Korea**
  - Implementation of a mandatory energy management audit
  - Implementation of no driving days for employees of public offices

- **Malaysia**
  - Implementation of demonstration projects for energy efficiency improvement in industry and commercial sectors.

- **New Zealand**
  - Under the NZ Energy Strategy maximise the efficient use of energy to safeguard affordability, economic productivity and the environment

- **USA**
  - Implementation and plan for various measures for energy efficiency improvement
    - Energy efficiency standards for appliances
    - Tax incentives for the purchase of efficient appliances and vehicles
    - Promote energy efficiency and saving at federal agencies
    - Establish renewable fuel standards

- **Viet Nam**
  - UNDP and the Vietnam Ministry of Science and Technology will implement a project to raise the effectiveness of energy use at small and medium enterprises (SMEs)
Energy Infrastructure Development

- **Brunei Darussalam**
  - LNG export terminal expansion programme

- **Canada**
  - 8 Proposals to build LNG facilities underway

- **China**
  - Guangdong LNG terminal started operation in June 2006.
  - The first section of China’s ultra-high-voltage electricity grid was started in August 2006.

- **Indonesia**
  - New pipeline construction awards granted.
  - LNG investment to be made in the Timor Sea by a Japanese company.

- **Malaysia**
  - Expansion of Petronas LNG to 24 million tonnes per year is underway, to be completed in 2009.

- **Mexico**
  - Four permits for LNG re-gasification facilities on the Gulf of Mexico (one unit) and Baja California (three units).

- **Peru**
  - Camisea LNG project will be operational by 2009. Currently gas is supplied domestically by pipelines.

- **Russia**
  - Construction of the pipeline from Eastern Siberia to the Pacific coast was started in April 2006.

- **Singapore**
  - Singapore to develop LNG receiving terminal in cooperation with Korea’s KOGAS.

- **Thailand**
  - Plans to upgrade electricity transmission capacity over the next five years.
Upstream Development

- **Australia**
  - Made available a number of new offshore petroleum areas for exploration. 36 areas remained open for bidding between March 2005 and March 2006.

- **Brunei Darussalam**
  - Two new blocks were tendered in 2005 and taken by international oil companies in 2006.

- **Canada**
  - New innovative process for extracting oil sands developed and applied to maximise recoverable resources.

- **China**
  - Restructuring of small coal mines and building larger coal production bases with annual production over 100 million tonnes.

- **Indonesia**
  - In 2006, Indonesia offered a total of 68 blocks for oil and gas exploration.
  - Joint Operating Agreement (JOA) for the Cebu block was signed.

- **Mexico**
  - Capital expenditure needed for exploration and production over next five years will be US$45.3 billion.
  - PEMEX to use the multiple services contracts system to work around constitutional limitations and allow private parties to participate in exploration activities for oil and gas.

- **Russia**
  - In December 2006, Gazprom took over control of the Sakhalin 2 project and oil and natural gas production was restarted.