APEC Energy Overview

APERC Workshop at EWG35
Iquitos, Peru
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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.
History of Publication

December 2002

December 2003

February 2005

February 2006

February 2007

February 2008

November 2001

6-7 April 2000

6-7 March 2000

• Inaugural Issue

• 2nd Edition

• 3rd Edition

• 4th Edition

• 5th Edition

• 6th Edition

• 7th Edition

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

• First proposed at the 11th EGEDA Meeting, Tokyo, Japan
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 2007

- Introduction
  - Key data and economic profile (2005), energy reserves
- Energy Supply and Consumption for 2005
  - Primary Energy Supply
  - Final Energy Consumption
- Policy Overview
  - Energy Policy Goals, Objectives and Strategies
- Notable Energy Developments (2005-2007)
  - Recent Energy Policy Changes or Energy Infrastructure Developments
Regional Grouping

- Russia
- Northeast Asia
  - China
  - Japan
  - Korea
  - Vietnam
  - Hong Kong, China
  - Chinese Taipei
  - Taiwan
- North America
  - USA
- Latin America
  - Peru
- Southeast Asia
  - Indonesia
  - Singapore
  - Philippines
  - Malaysia
  - Papua New Guinea
- Oceania
  - Australia
  - New Zealand
  - Papua New Guinea

Asia-Pacific Economic Cooperation

Asia Pacific Energy Research Centre
Tokyo
### GDP in APEC (2004-2005)

#### GDP by Region (2004-2005)

<table>
<thead>
<tr>
<th>Region</th>
<th>2004 US$, Billions, PPP</th>
<th>2005 US$, Billions, PPP</th>
<th>AAG 2004-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>APEC</td>
<td>29207</td>
<td>30730</td>
<td>5.2%</td>
</tr>
<tr>
<td>North America</td>
<td>11636</td>
<td>12005</td>
<td>3.2%</td>
</tr>
<tr>
<td>Latin America</td>
<td>1263</td>
<td>1311</td>
<td>3.8%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>5125</td>
<td>5288</td>
<td>3.2%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>2,108</td>
<td>2,223</td>
<td>5.5%</td>
</tr>
<tr>
<td>Oceania</td>
<td>662</td>
<td>680</td>
<td>2.7%</td>
</tr>
<tr>
<td>China</td>
<td>7116</td>
<td>7842</td>
<td>10.2%</td>
</tr>
<tr>
<td>Russia</td>
<td>1298</td>
<td>1381</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

**Source:** APERC (2008)
### Total Primary Energy Supply in APEC (2004-2005)

#### TPES by Region (1990, 2004 and 2005)

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>APEC</td>
<td>3764</td>
<td>6195</td>
<td>6405</td>
<td>3.4%</td>
</tr>
<tr>
<td>North America</td>
<td>2137</td>
<td>2611</td>
<td>2628</td>
<td>0.7%</td>
</tr>
<tr>
<td>Latin America</td>
<td>146</td>
<td>205</td>
<td>217</td>
<td>6.0%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>583</td>
<td>851</td>
<td>858</td>
<td>0.8%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>139</td>
<td>353</td>
<td>368</td>
<td>4.3%</td>
</tr>
<tr>
<td>Oceania</td>
<td>104</td>
<td>133</td>
<td>141</td>
<td>5.9%</td>
</tr>
<tr>
<td>China</td>
<td>654</td>
<td>1400</td>
<td>1545</td>
<td>10.4%</td>
</tr>
<tr>
<td>Russia</td>
<td>0</td>
<td>641</td>
<td>647</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

#### Incremental Growth of TPES by Region (2004-2005)

- **North America**: 0.7%
- **Latin America**: 6.0%
- **Northeast Asia**: 0.8%
- **Southeast Asia**: 4.3%
- **Oceania**: 5.9%
- **China**: 10.4%
- **Russia**: 0.8%

Source: APERC (2008)
## Total Primary Energy Supply by Source and by Region (2004-2005)


<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>1462</td>
<td>1994</td>
<td>2140</td>
<td>7.3%</td>
</tr>
<tr>
<td>Oil</td>
<td>1856</td>
<td>2240</td>
<td>2266</td>
<td>1.1%</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>1087</td>
<td>1258</td>
<td>1281</td>
<td>1.8%</td>
</tr>
<tr>
<td>Others</td>
<td>599</td>
<td>703</td>
<td>718</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

### Incremental Growth of TPES by Fuel and by Region (2004-2005)

![Graph showing incremental growth of TPES by fuel and region]

Source: APERC (2008)


<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>APEC</td>
<td>3328</td>
<td>5620</td>
<td>5794</td>
<td>3.1%</td>
</tr>
<tr>
<td>North America</td>
<td>1925</td>
<td>2058</td>
<td>2048</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Latin America</td>
<td>211</td>
<td>271</td>
<td>276</td>
<td>1.9%</td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>106</td>
<td>149</td>
<td>155</td>
<td>3.7%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>205</td>
<td>400</td>
<td>418</td>
<td>4.4%</td>
</tr>
<tr>
<td>Oceania</td>
<td>175</td>
<td>275</td>
<td>286</td>
<td>4.2%</td>
</tr>
<tr>
<td>China</td>
<td>706</td>
<td>1308</td>
<td>1426</td>
<td>9.0%</td>
</tr>
<tr>
<td>Russia</td>
<td>-</td>
<td>1158</td>
<td>1185</td>
<td>2.3%</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>APEC</td>
<td>555</td>
<td>672</td>
<td>707</td>
<td>5.3%</td>
</tr>
<tr>
<td>North America</td>
<td>284</td>
<td>577</td>
<td>601</td>
<td>4.1%</td>
</tr>
<tr>
<td>Latin America</td>
<td>-63</td>
<td>-63</td>
<td>-57</td>
<td></td>
</tr>
<tr>
<td>Northeast Asia</td>
<td>482</td>
<td>730</td>
<td>721</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>-52</td>
<td>-27</td>
<td>-20</td>
<td></td>
</tr>
<tr>
<td>Oceania</td>
<td>-65</td>
<td>-139</td>
<td>-144</td>
<td>3.5%</td>
</tr>
<tr>
<td>China</td>
<td>-30</td>
<td>104</td>
<td>138</td>
<td>32.7%</td>
</tr>
<tr>
<td>Russia</td>
<td>-</td>
<td>-511</td>
<td>-531</td>
<td></td>
</tr>
</tbody>
</table>

Source: APERC (2008)
Notable Energy Developments

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

<table>
<thead>
<tr>
<th>Australia</th>
<th>Hong Kong, China</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Energy Efficiency Opportunities Act 2006 and Regulation 2006 to encourage large energy users to take a more rigorous approach to energy management.</td>
<td>- 3,200 projects have been registered under the voluntary energy efficiency labeling scheme.</td>
<td>- Under the NZ Energy Strategy maximise the efficient use of energy to safeguard affordability, economic productivity and the environment.</td>
</tr>
<tr>
<td><strong>Canada</strong></td>
<td><strong>Japan</strong></td>
<td><strong>USA</strong></td>
</tr>
</tbody>
</table>
| - A few initiatives are implemented to provide financial support for energy efficiency improvement across the sector.  
  - Mandatory fuel economy standard to be introduced from those automobile produced in 2011. | - Amendment of energy conservation law to improve passenger vehicle fuel economy standards, to mandate freight truck owners to report conservation target, and building owners (larger than 2,000 m²) to report conservation target.  
  - Fuel economy standard of new passenger vehicles would increase from 13.6 km/l in 2004 level to 16.8 km/l in 2015. | - 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 |
| **China** | **Korea** | **Viet Nam** |
| - Ten key projects for energy launched  
  - Target to save 240 million tonnes of coal equivalent. | - Implementation of Average Fuel Economy Standards (AFE) and amendment of labeling standards for energy efficient products. | - 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). |
| **Top-1000 Enterprise Energy Conservation Action Plan launched**  
  - Target to save 100 million tce by 2010. | | |
<table>
<thead>
<tr>
<th>Brunei Darussalam</th>
<th>Malaysia</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>- LNG export terminal expansion programme</td>
<td>- Expansion of Petronas LNG to 24 million tonnes per year is underway, to be completed in 2009.</td>
<td>- Construction of the pipeline from Eastern Siberia to the Pacific coast was started in April 2006.</td>
</tr>
<tr>
<td>Canada</td>
<td>- 4 LNG receiving terminal projects received government approval for construction</td>
<td>- Announcement of economy’s plan to host several types of international nuclear fuel cycle service centres as joint ventures with other economies</td>
</tr>
<tr>
<td>China</td>
<td>- Guangdong LNG terminal started operation in June 2006.</td>
<td>Thailand</td>
</tr>
<tr>
<td>- The first section of China’s ultra-high-voltage electricity grid was started in August 2006.</td>
<td>- Four permits for LNG regasification facilities on the Gulf of Mexico (one unit) and Baja California (three units).</td>
<td>- The plan for LNG procurement.</td>
</tr>
<tr>
<td>Indonesia</td>
<td>- LNG investment to be made in the Timor Sea by a Japanese company.</td>
<td>- Nuclear power plants are under consideration, with a total generating capacity of 4,000 MW (2,000 MW in 2020 and another 2,000MW in 2021).</td>
</tr>
<tr>
<td>- Advancing in preparations to possess the first nuclear power plant</td>
<td>- Camisea LNG project will be operational by 2009. Currently gas is supplied domestically by pipelines.</td>
<td>Viet Nam</td>
</tr>
<tr>
<td>- The first series of four nuclear power plants of about 4000 MW to be introduced in 2025.</td>
<td>- Undertaking a review of scientific and technical options to revive the economy’s nuclear power program.</td>
<td>- Vietnam Ministry of Industry (MOI) has submitted to the government for approval the pre-feasibility study on building a 2,000 MW nuclear power plant.</td>
</tr>
</tbody>
</table>
**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.

Mexico

- PEMEX to use the multiple services contracts system to work around constitutional limitations and allow private parties in exploration activities for oil and gas.

Papua New Guinea

- A number of international companies are showing their great interests in investing in the PNG’s upstream oil and gas sector. By the end of 2007, the total number of petroleum prospecting licenses (PPLs) reached 37 compared with 17 in 2003.

Philippines

- The economy now has 28 service contracts (SC) with foreign investors. Four of these are approved under PECR 2005 and three negotiated SCs are firmed up in 2006.

Russia

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

Thailand

- The 20th Petroleum Concession Bidding Round was announced in May 2007, and the bid submission is open for one year for 65 exploration blocks: 56 onshore and 9 in the Gulf of Thailand.
Environment

Australia

- In July 2007 the Australian Government released Australia’s Climate Change Policy - Our economy, Our environment, Our future to set an aspirational long-term goal for GHG emissions reduction

Canada

- The Government of Canada is pursuing an integrated strategy to address climate change and air quality problems through its Clean Air Agenda.

China

- The Chinese government published the first “China’s National Climate Change Programme” in June 2007 to address climate change and show its determination to reduce greenhouse gas (GHG) emissions

Japan

- On 21 December, 2007, the joint study committee under METI and Ministry of Environment released the revised plan to meet the Kyoto target.
  - Encouragement of lifestyle change, higher emissions reduction target for industries, and mandatory introduction of an adiabator for newly constructed houses and buildings.

Chinese Taipei

- The 2005 General Energy Conference identified the need for Chinese Taipei to commit itself to the global efforts to mitigate climate change.

USA

- In the absence of federal commitments to reduce US GHG emissions, a number of regional, state, and city-level initiatives have been formed and were active as of 2007.
  - California The Global Warming Solutions Act of 2006
  - Midwestern Greenhouse Gas Reduction Accord
  - Ten states in the north-eastern US are members of the Regional Greenhouse Gas Initiative
  - The US Mayors’ Climate Protection Agreement, launched in Seattle in 2005
APERC

www.ieej.or.jp/ aperc