Update on Energy Sector Activities and Plans in the Russian Far East

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<table>
<thead>
<tr>
<th></th>
<th>Far East</th>
<th>Share of Nation, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Territory, mln sq km</td>
<td>6.2</td>
<td>36.4</td>
</tr>
<tr>
<td>Population, thous. people</td>
<td>7,038</td>
<td>4.9</td>
</tr>
<tr>
<td>GDP, bln. USD</td>
<td>12.6</td>
<td>4.4</td>
</tr>
<tr>
<td>TPEC, MTCE</td>
<td>41.8</td>
<td>4.4</td>
</tr>
</tbody>
</table>
## Southern Region’s Share

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Population</td>
<td>76.5</td>
</tr>
<tr>
<td>Regional GDP</td>
<td>78.6</td>
</tr>
<tr>
<td>Primary Energy Consumption</td>
<td>72.6</td>
</tr>
</tbody>
</table>
## Economic & Energy Trends

<table>
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<tr>
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<tbody>
<tr>
<td>Industrial Product 38% (that of 1991)</td>
<td>14.2 % (over period)</td>
</tr>
<tr>
<td>TPEC 68% (that of 1991)</td>
<td>Electricity Consumption 11.1% (over period)</td>
</tr>
</tbody>
</table>
## Estimated Energy Consumption, MTCE (as of 2002)

<table>
<thead>
<tr>
<th>Source</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>42.3</td>
</tr>
<tr>
<td>COAL</td>
<td>19.2</td>
</tr>
<tr>
<td>OIL</td>
<td>14.8</td>
</tr>
<tr>
<td>GAS</td>
<td>3.6</td>
</tr>
<tr>
<td>HYDRO &amp; Renewables</td>
<td>3.4</td>
</tr>
<tr>
<td>Installed Capacities, GW</td>
<td>11.3</td>
</tr>
</tbody>
</table>
Energy Mix (as of 2002)

- Coal: 45%
- Petroleum: 35%
- Gas: 9%
- Hydro & Other Renewables: 8%
- Other: 3%
Conditions of Energy Supply

- Consequences of crises still exist but loosen
- Financial Situation Improved
- Non-payments Decreased
- Supplying the Fuels Improved
### Conditions of Energy Supply

**Investments in Energy Sector are growing**

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL</strong></td>
<td>214</td>
<td>1296</td>
</tr>
<tr>
<td><strong>mln. USD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Electric Power</strong></td>
<td>122.4</td>
<td>421</td>
</tr>
<tr>
<td><strong>OIL &amp; GAS</strong></td>
<td>81</td>
<td>731.5</td>
</tr>
</tbody>
</table>
Conditions of Energy Supply

- Demand for energy is reviving, however, in relatively unstable pace

Growth Rates of Electricity Consumption (%)

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003 (first half)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Rates of Electricity Consumption (%)</td>
<td>1.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Conditions of Energy Supply

GDP Energy Intensity declining (%) (case of Khabarovsk Territory)
Development Plan of Sakhalin-1 approved

• First Phase will focus on Chaivo & Odoptu Fields

• First Oil expected in 2005 (12 mln t in 2010)

• Limited Gas Production for domestic demand (1.5 BCM since 2006)

• First Phase Investments come to 5 bln USD
Development Plan of Sakhalin-2 approved

• Phase 1 started in 1999 (seasonal oil production)
• Phase 2 will focus on round year oil & gas extraction
• 800 km Oil & Gas Pipeline
• LNG Plant and Oil & Gas Terminals
• Round year extraction planned by 2007 (6 mln t of Oil, 4.8 mln t of LNG)
• Phase 2 Investments come to 8 bln USD
Bureiskaya HPP & Network Project

- Construction of Bureya HPP (2 GW, 7.1 bln kWh)
- The 500 kV transmission from the West (Amur Territory) to the South-East (Vladivostok Area)
Bureya HPP & Related 500 kv Network Project

CHINA

DPRK

Bureya HPP

Khabarovsk

500 kV Network

Vladivostok
Latest Energy Outlook for the Far East

- ENERGY STRATEGY of Russia up to 2020

- FEDERAL PROGRAM:
  
  Economic Development of the Far East and Zabaikalie up to 2010
  
  (The Program “The Far East and Zabaikalie”)
“Energy Strategy of Russia up to 2020”

- Too General for Analysis in quantitative and regional aspects

- **Key Assumptions:**
  - economic growth of 5.5% on average annually
  - radical reduction in GDP energy intensity (twofold by 2020)
  - Russia will remain large energy exporter
Federal Program “Far East and Zabaikalie up to 2010”

General Objective is Energy Security for the region

- Reliable and Diversified Energy Supply
- Energy independence as much as possible
- Acceptable Prices for Energy
- Mitigation of Local Environmental Impact
Federal Program “Far East and Zabaikalie up to 2010”

The Program allows for general priority of the regional economic growth and increase in energy consumption, accordingly. The growth of primary energy consumption makes 1.8% annually, electricity consumption – about 3% per year.
Primary Energy Production & Consumption in the Far East (MTCE)

- Production:
  - 1990: 60.3
  - 2000: 41.7
  - 2006: 46.3
  - 2010: 50.5

- Consumption:
  - 1990: 40.6
  - 2000: 30.8
  - 2006: 45.2
  - 2010: 108.2
The region's electricity demand in 2010 is expected to be about 51 bln kWh. Electricity production will have reserves for expanding export to neighboring NEA countries up to 3 to 5 bln kWh.
Renewables Share, %

- 2000: 27.8%
- 2006: 27.7%
- 2010: 36.0%
SHARE OF NATURAL GAS IN FOSSIL FUELS CONSUMPTION (%)

- 2000: 11.8%
- 2006: 20.6%
- 2010: 24.0%
REGIONAL ENERGY CONCERNS

• upgrading energy infrastructure
• reasonable prices for energy resources
• restructuring energy markets (primarily in the electricity, heat, and natural gas sectors)
• developing a stable legal infrastructure to attract investments
• increasing energy efficiency
• mitigating local environment pollution
• expanding international cooperation in the energy sector
THANK YOU FOR ATTENTION!