British and European Imports of Russian Coal:

Current and Future Market Trends

- UK in a European Context
- Import Trends
  - Port Infrastructure
- UK Generation Demand Drivers
  - Future Burn Scenarios
  - LCPD Issues
- Issues for Russian Coal in the UK
- European Opportunities
- SWOT Summary
UK dominates European imports from Russia

Source – IEA 2005 Data

UK imports have grown dramatically...

Source – Dti

Coaltrans Moscow
18th June 2007
...and in 2006 Russian imports exceeded UK supply.

Steam Coal (42.8 Mt)

* Source: MCIS

NB Pie charts to scale by area

- Russia
- South Africa
- Colombia
- Indonesia
- Poland
- USA
- Others

Many UK ports were used in 2006...

Source: HMRC
...with Russian imports the most widely spread

![Pie chart showing distribution of Russian imports by port.]

Source – HMRC

Coaltrans Moscow
18th June 2007

Ports all around the UK received Russian shipments

![Map showing ports where Russian shipments were received.]

Source – EWS Energy/HMRC

Coaltrans Moscow
18th June 2007
UK generation demand has several drivers

- Available capacity
  - New build/plant closures
  - Over 11 GW new coal plant planned
- Prices
  - Spark Spread vs Dark Spread (Clean)
  - Seasonality
- Large Combustion Plants Directive (LCPD)
  - Operating regime for opted-out plant
  - Progress with FGD installation
- EU Emissions Trading Scheme

Scenarios vary widely for future UK coal burn...

Energy White Paper Projections

- High
- Medium
- Baseline
- Low
- Zero
- White Paper Measures

Coal Forum Future Generation Sub-Group
...and UK supply and demand scenarios cover a wide range

Purchase Options are Limited by the LCPD

- New SOx and NOx limits from 1 January 2008 at opted-in plants
  - FGD plants will tolerate a range of sulphurs
  - But NOx becomes a bigger issue
- Opted-out plants run for 20,000 hours from 1/1/08 – must close by 31/12/15
  - Equates to 28.5% load factor spread over whole period
- IPPC plant limits will also apply
- Further tightening of NOx limits post 2015
  - May require Selective Catalytic Reduction (SCR)
Over 70% of plant is opted in to the LCPD...

Source – EWS Energy/HMRC
Coaltrans Moscow
18th June 2007

...and over 11 GW new coal plant is proposed

Source – EWS Energy/HMRC
Coaltrans Moscow
18th June 2007
20.6 GW of plant is opted in to the LCPD...

<table>
<thead>
<tr>
<th>Station</th>
<th>Operator</th>
<th>Capacity (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberthaw</td>
<td>RWE npower</td>
<td>1.5</td>
</tr>
<tr>
<td>Cottam</td>
<td>EDF Energy</td>
<td>2.0</td>
</tr>
<tr>
<td>Drax</td>
<td>Drax Power</td>
<td>3.9</td>
</tr>
<tr>
<td>Eggborough</td>
<td>British Energy</td>
<td>2.0</td>
</tr>
<tr>
<td>Ferrybridge (stack 1)</td>
<td>SSE</td>
<td>1.0</td>
</tr>
<tr>
<td>Fiddlers Ferry</td>
<td>SSE</td>
<td>2.0</td>
</tr>
<tr>
<td>Kilroot</td>
<td>AES Kilroot</td>
<td>0.5</td>
</tr>
<tr>
<td>Longannet</td>
<td>Scottish Power</td>
<td>2.3</td>
</tr>
<tr>
<td>Ratcliffe</td>
<td>E.On-UK</td>
<td>2.0</td>
</tr>
<tr>
<td>Rugeley</td>
<td>International Power</td>
<td>1.0</td>
</tr>
<tr>
<td>Uskmouth</td>
<td>Carron Energy</td>
<td>0.4</td>
</tr>
<tr>
<td>West Burton</td>
<td>EDF Energy</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>20.6</strong></td>
</tr>
</tbody>
</table>

...and 8.2 GW is opted out

<table>
<thead>
<tr>
<th>Station</th>
<th>Operator</th>
<th>Capacity (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingsnorth</td>
<td>E.On-UK</td>
<td>2.0</td>
</tr>
<tr>
<td>Tilbury</td>
<td>RWE npower</td>
<td>1.0</td>
</tr>
<tr>
<td>Cockenzie</td>
<td>Scottish Power</td>
<td>1.2</td>
</tr>
<tr>
<td>Didcot</td>
<td>RWE npower</td>
<td>2.0</td>
</tr>
<tr>
<td>Ferrybridge (stack 2)</td>
<td>SSE</td>
<td>1.0</td>
</tr>
<tr>
<td>Ironbridge</td>
<td>E.On-UK</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>8.2</strong></td>
</tr>
</tbody>
</table>

- Opted-out plant at Kingsnorth, Tilbury, Cockenzie and Ferrybridge may be retrofitted with supercritical boilers or replaced with new clean coal capacity
- Total new projects announced amount to 11.4 GW, but the outturn will depend on the regulatory framework
Russian Coal performs less well than others for NOx

- Not a precise science
  - But some general conclusions
- Russian coal generally has high fuel nitrogen, which tends to push it down the NOx-friendly league table
- Indonesian and South American coals are preferred for NOx
  - UK buyers are trialling Indonesian coals

Relative NOx Emissions for World-Traded Coals

Source – E.ON UK
UK Generator customers want...

- Consistent quality
  - No blends of high and low volatile content – all blend components should be high volatile
- Low sulphur – 0.3 to 0.5%
- Good calorific value – minimum 6,000 kcal Net
- Good handleability – 0 to 50mm and free flowing
- Reliable supplier – coal available for vessel
- Representative sampling of the cargo – introduction of automatic sampling.
- Competitive prices

Source – E.ON UK

Will Russian coal remain the dominant player in the UK?

- Corporate Social Responsibility
  - Increasing concern over safety, social responsibility, environmental stewardship
  - Accreditation to international standards may be required
- Concerns over security of supply
  - Rail infrastructure
  - Concerns heightened by recent events
  - Political factors
- Buyers may look for greater diversity
CSR – Over-Arching Principles

- UN Global Compact Ten Principles
  - Covers human rights, labour, the environment and anti-corruption
  - Ties in several other UN declarations and conventions
- International Council on Mining and Metals – Ten Principles of Sustainable Development
  - ICMM working on verification processes to measure corporate performance against principles

CSR – Relevant International Standards

- Social Accountability 8000
  - Global, verifiable system for managing corporate social performance
- ISO 14000
  - Environmental management and verification system
- OHSAS 18001
  - Health and safety management system
Europe is the world’s third largest coal consumer...

...And the IEA forecasts coal imports to Europe growing
Reducing local production could create opportunities

Source – MCIS 2006
*IEA 2005 Data

European hard coal production is reducing

Coaltrans Moscow
18th June 2007
Summary - SWOT Analysis for Russian Coal in Europe

- **Strengths**
  - Low sulphur
  - Smaller shipments
  - Improved quality and reliability
  - Established supplier relationships

- **Weaknesses**
  - NOx performance
  - Rail infrastructure
  - Corporate social responsibility issues
  - Cost base

- **Opportunities**
  - Demand from new plant
  - Reducing local supply
    - Poland/Germany?
  - Geographical advantages

- **Threats**
  - Climate change policies
  - Political interference
    - Real or perceived
  - Reduced international prices

---

Thank You
SA 8000 Elements (1)

-Child Labor: No workers under the age of 15; minimum lowered to 14 for countries operating under the ILO Convention 138 developing-country exception; remediation of any child found to be working
-Forced Labor: No forced labor, including prison or debt bondage labor; no lodging of deposits or identity papers by employers or outside recruiters
-Health and Safety: Provide a safe and healthy work environment; take steps to prevent injuries; regular health and safety worker training; system to detect threats to health and safety; access to bathrooms and potable water
-Freedom of Association and Right to Collective Bargaining: Respect the right to form and join trade unions and bargain collectively; where law prohibits these freedoms, facilitate parallel means of association and bargaining
-Discrimination: No discrimination based on race, caste, origin, religion, disability, gender, sexual orientation, union or political affiliation, or age; no sexual harassment

SA 8000 Elements (2)

-Discipline: No corporal punishment, mental or physical coercion or verbal abuse
-Working Hours: Comply with the applicable law but, in any event, no more than 48 hours per week with at least one day off for every seven day period; voluntary overtime paid at a premium rate and not to exceed 12 hours per week on a regular basis; overtime may be mandatory if part of a collective bargaining agreement
-Compensation: Wages paid for a standard work week must meet the legal and industry standards and be sufficient to meet the basic need of workers and their families; no disciplinary deductions
-Management Systems: Facilities seeking to gain and maintain certification must go beyond simple compliance to integrate the standard into their management systems and practices.