Finding Value in the UKCS

Chaired By

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Economics and Commercial Director
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UKCS – is there light at the end of the tunnel?

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Senior Analyst, UK Upstream Research
Wood Mackenzie
UKCS – is there light at the end of the tunnel?
Erin Moffat
Senior Analyst, UK Upstream Research
Recent spend at peak levels but expected to start declining

2014 development capex – top 10 countries

Source: Wood Mackenzie

UK capital investment

Pre-FID
Under Development

Source: Wood Mackenzie

www.woodmac.com
UK investment profile is changing

UK development spend by resource theme

% of production by resource theme

Source: Wood Mackenzie
As the UK matures, companies are investing more in technically challenging fields to access material reserve volumes

Source: Wood Mackenzie
Budget impact – radical change was essential for the UKCS

Total value change from Budget 2015

- **Operator Value**
- **Government Take**

International fiscal comparison*

Pre Budget

<table>
<thead>
<tr>
<th>Post Tax Remaining PV (£ billion)</th>
<th>Pre Budget</th>
<th>Post Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator Value</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Government Take</td>
<td>60</td>
<td>40</td>
</tr>
</tbody>
</table>

Post Tax Remaining PV ( £ billion)

Brent oil price assumption (nominal terms) is US$60.00/bbl in 2015, US$65.00/bbl in 2016, US$70.00/bbl in 2017, then long-term assumption of US$85.00/bbl (real, 2014 terms) from 2018 onward.

Source: Wood Mackenzie

* Comparison of fiscal competitiveness measured using a 50 mmboe model oil field
Agenda

1. Capital investment

2. Production and exploration

3. Project analysis
UK production set to stabilise in the short term

**Liquids production forecast**
- Yet-To-Find

**Gas production forecast**
- Yet-To-Find
- New Developments
- Onstream

Source: Wood Mackenzie
Playing with numbers – what is the real state of UK exploration?

UK success rates*

Success Rate


Sub commercial Commercial

UK 2006-2014 well costs and mmboe per well

Average spend per well
Average mmboe per well

*Includes tight holes and sidetracks
Source: Wood Mackenzie
Why are UK volumes per exploration well so small?

86 wells completed 2012-2014 added just 166 mmboe – less than 2 mmboe per well

- Run of bad luck lasting three years?
  **UNLIKELY**

- Explorers are ignoring economics and drilling wells with negative EMVs?
  **UNLIKELY**

- Well success rates are below prognosis?
  **POSSIBLY**

- Discoveries sizes are below prognosis?
  **POSSIBLY**

Part of the answer is better pre-drill analysis – helped by improved access to data and sharing of knowledge

Source: Wood Mackenzie
What should the UK exploration industry do?

If the next 100 wells are similar to the last 100, we can expect a similar result

- Try another 100 similar wells?  
  **DEFINITELY NOT**

- Stop exploring?  
  **MAYBE**

- Try a different kind of prospect?  
  **MAYBE**

- Try a different kind of explorer?  
  **MAYBE**

This is likely to mean bigger, riskier prospects – new plays, new seismic

Perhaps more private equity backed or focused specialists – need access to acreage

Source: Wood Mackenzie
Agenda

1. Capital investment
2. Production and exploration
3. Project analysis
How healthy is the project pipeline?

Under Development and pre-FID reserves brought onstream by year

Source: Wood Mackenzie
UK Pre-FID projects still under pressure

More delays to already delayed projects? 900 mmboe at risk if Brent below US$60/bbl.

Source: Wood Mackenzie
Wood Mackenzie’s expectation for capital cost deflation

Capital costs – expected deflation

-55% -45% -35% -25% -15% -5%

Drilling rig
Drilling services
Subsea kit
FPSO
Platforms
Pipelines
Installation

2015
2016

Rig rates quickest to respond
UK has more rig redundancy
Long lead items will take time to deflate
FPSO market is limited – so less scope for movement

Source: Wood Mackenzie

Trusted commercial intelligence
www.woodmac.com
Wood Mackenzie’s expectation for operating cost deflation

**Operating costs – expected deflation**

- **Well services**
- **Logistics**
- **Labour**
- **IRM**
- **G&A**

-30% -20% -10% 0%

**2015**

- Vessel costs to see most movement
- Labour costs first to move
- Norway labour costs to stay flat, rather than deflate
- Further scope for reductions in 2016

Source: Wood Mackenzie
Cost deflation - near-term pre-FID projects will see the biggest reductions

Source: Wood Mackenzie
Decommissioning spend will overtake capex in the UK in 2022 – but with work, this can be delayed

Source: Wood Mackenzie
Sub commercial fields could offer a big prize …

Potentially economic recoverable reserves

- Southern Gas Basin
- Atlantic Margin
- Northern North Sea
- Other

NPV10 of potentially economic fields in the UK

- Southern Gas Basin
- Atlantic Margin
- Northern North Sea
- Other

1.3 billion boe

Source: Wood Mackenzie

US$10.8 billion NPV10*

* Indicative valuation for sub commercial fields, of which a subset are likely to progress to commercial projects.
Summary

Key takeaways

UK upstream is at a crossroads, production set to stabilise in the short term but will decline terminally unless exploration is revitalised.

Near term investment decisions are complicated; cost deflation and price vs capital discipline and return on investment

Industry needs to put in place sustainable responses to high costs and low efficiency

If sub commercial projects can be harvested, the prize could be large
Erin Moffat  
Senior Analyst, UK Upstream Research

- Erin joined Wood Mackenzie in 2006 and currently works as a senior analyst in the UK Upstream team. In this role she is responsible for updating and maintaining Wood Mackenzie’s coverage of the UK.
- In addition to this, Erin has also contributed to consulting projects including regional overviews, asset valuations, infrastructure studies, opportunity screening and cost and peer group benchmarking.
- Erin has previously been responsible for Wood Mackenzie’s coverage of Albania, Greece and Italy.
- Erin holds a BA(Hons) in Geography and Environmental Planning from the University of Strathclyde.
- Prior to joining Wood Mackenzie, Erin worked as an analyst for Scottish Water.
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Oilfield Service Sector Outlook

Alex Milward
Advisory Partner
EY
The OFS sector is a significant part of the UK Economy

### Market Overview

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>UK</th>
<th>Exports</th>
<th>Growth (2009-13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>£25B</td>
<td>44%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>£27B</td>
<td>46%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>£31B</td>
<td>44%</td>
<td></td>
<td>+56%</td>
</tr>
<tr>
<td>2012</td>
<td>£35B</td>
<td>42%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>£39B</td>
<td>42%</td>
<td></td>
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</tr>
</tbody>
</table>

Source: EY, Review of the UK Oilfield Services Market, March 2015
The global oil and gas industry is in a period of structural change

Offshore Decommissioning Regulation

Implications for UKCS

- Pressure to improve productivity and reduce costs
- Declining competitiveness of UKCS vs. global basins
- Decommissioning activity moved forward
- Composition of the UKCS is changing

Shale technology has lowered the oil cost curve

Source: Goldman Sachs, 420 Projects to Change the World, May 2015
This change is having a significant impact on the OFS sector

**Market Segment**
- Reservoirs
- Wells
- Facilities
- Marine & Subsea
- Support & Service

**Cross OFS sector implications**
- Margin reduction (10-30%)
- Capex and domestic focused industries hit hardest
- Easier cost savings already achieved
- Export market increasingly important
Today we are focusing on three of the largest sub-sectors:

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Focus subsectors</th>
<th>2013 revenue</th>
<th>2009-13 Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoirs</td>
<td>Drilling and Well Equipment Design and Manufacture (DWEDM)</td>
<td>£2.4B</td>
<td>84%</td>
</tr>
<tr>
<td>Wells</td>
<td>Engineering, Operations, Maintenance and Decommissioning Contractors (EOMD)</td>
<td>£5.7B</td>
<td>39%</td>
</tr>
<tr>
<td>Facilities</td>
<td>Marine and Subsea Contractors and Equipment (MSCE)</td>
<td>£5.7B</td>
<td>72%</td>
</tr>
<tr>
<td>Marine &amp; Subsea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support &amp; Service</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Drilling and well equipment design and manufacture (DWEDM)

Prolonged period of challenge requiring extensive cost discipline

**Implications**

- Drilling programmes in decline – especially exploration wells
- Companies currently working through backlog
- Companies increasingly focused on onshore E&P
- Consolidation of market

*IHSPetrodata, Morgan Stanley Research (Floater and Jack-up Rigs) **Goldman Sachs, 420 Projects to Change the World, May 2015
Engineering, operations & maintenance and decommissioning (EOMD) Engineering hit hardest – O&M and decommissioning provide a buffer

**Implications**
- Significantly impacted by UKCS drivers – 84% of revenue in UK
- Engineering severely impacted
- Operations and Maintenance will remain fairly stable
- Decommissioning increases moderately in mid term.

**UKCS – Capex and Opex 2011-18**

<table>
<thead>
<tr>
<th>Year</th>
<th>Unsanction Capex</th>
<th>Sanctioned Capex</th>
<th>Opex</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>£9B</td>
<td>£7B</td>
<td>£1B</td>
</tr>
<tr>
<td>2014</td>
<td>£15B</td>
<td>£10B</td>
<td>£2B</td>
</tr>
<tr>
<td>2018</td>
<td>£3B</td>
<td>£3B</td>
<td>£3B</td>
</tr>
</tbody>
</table>

**UKCS - Decommissioning market forecast**

<table>
<thead>
<tr>
<th>Year</th>
<th>2014 forecast</th>
<th>2015 forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>£0B</td>
<td>£1B</td>
</tr>
<tr>
<td>2016</td>
<td>£1B</td>
<td>£1B</td>
</tr>
<tr>
<td>2017</td>
<td>£1B</td>
<td>£1B</td>
</tr>
<tr>
<td>2018</td>
<td>£1B</td>
<td>£1B</td>
</tr>
<tr>
<td>2019</td>
<td>£1B</td>
<td>£1B</td>
</tr>
</tbody>
</table>

Source: Oil and Gas UK, Activity Survey, 2015
Marine and subsea contractors and equipment (MSCE)
Short term pressures but long term prospects remain sound

Implications
• Short term decrease in new builds / installations
• Long term growth story due to tech advancement
• Companies working through backlogs
• New alliances likely to form
• Rising challenge to UK as a subsea hub

Subsea capex ($B)

Source: Infield, 2015
We are seeing 4 typical response from supply chain companies

1. Rationalisation – improving balance sheet, reducing costs
2. Expansion – acquiring competitors, entering new markets
3. Innovation – investing in new technology
4. Collaboration – forming alliances to reduce cost
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MER UK: Role of the Fiscal Regime

Helen Dickinson
HM Treasury
THE OIL AND GAS INDUSTRY CONFERENCE

Maximising Economic Recovery in the UK - *The Next 40 years*