MERUK
Importance Subsea Industry

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Outline

- Introduction
- UKCS Potential
- Standardization
- Technology
Progressive regulation

Role of the OGA

- Effective stewardship
- Regulate
- Influence
- Promote
- Encouraging collaboration
- Investment and action

OGA Approach

- MER UK Strategy – binding obligations & safeguards
- Sanctions
- Information & Samples
- Dispute resolution
- Meetings

Striking the right balance

Sanctions
- Improvement notices
- Fines up to £1m
- Licence revocation, operator removal

Rewards
- Greater value via cooperation
- Transparency and better data access
- Timely, effective decision making
- MERUK benefits all

OGA formed as executive agency to DECC in April 2015 becoming a GOVCO in October 2016
Framework & approach

Regulatory Framework

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<td>Principal Objective</td>
<td>To facilitate and support the economic recovery of offshore petroleum</td>
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<td>Central Obligation</td>
<td>REER Strategy: &quot;to take the necessary measures to ensure that the economic value of the extractive industry is maximised&quot;</td>
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<td>Supporting Obligations</td>
<td>Exploration, Regional development, Asset stewardship, Technology, Decommissioning</td>
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<td>Creation</td>
<td>Facilitation, Licensing regime, Strategic and industry programmes, MFR, UK plan, Regulatory powers</td>
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<td>Regulatory Powers</td>
<td>Non-dollar licence conditions, Information and samples, Procedures, Licensee notices and applications, Third party access, Sanctions</td>
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<td>Guidance</td>
<td>Statutory, non-statutory, and Stewardship Expectations</td>
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<td>Sanction Notice</td>
<td>Enforcement, Financial penalties, Operator remuneration, Licensees reparation</td>
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Asset Stewardship

- New approach
- Cross-lifecycle
- Supporting performance

Strategic Approach

- Strategic hubs
- More transparency
- Collaboration & consolidation

Framework and approach worked closely with industry
**UKCS context**

### Infrastructure

- **12,000+ wells**
- **250+ subsea systems**
- **3,000+ pipelines**
- **250 fixed installations**

### Production (boepd)

- **2014**: 1.4 million
- **2015**: 1.6 million
- **2016**: 1.64 million

### Production efficiency

- **2014**: 65%
- **2015**: 71%
- **2016**: 73%

### Exploration & appraisal

- **2014 wells**: 32
- **2015 wells**: 26
- **2016 wells**: 22

### Development

- **5.7bn boe** in production or under development

### Cost

- **Unit costs down by a third**
  - Average unit operating costs have fallen from £18 per barrel in 2014 to an estimate of £12 per barrel in 2016

### Resources

- **43.5bn** produced
- **10bn** remaining potential
- **20bn** remaining potential

### Supply chain

- **c.£30bn turnover**
  - **80%** of UK oil and gas jobs
  - **43%** through exports

### Jobs

- **330,000 jobs in the UK**
  - Delivered through or supported by upstream oil and gas activity

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*Source – OGA and Oil & Gas UK*

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Adapting to new conditions
Subsea context

• The UK subsea sector is regarded as the global leader in technology, execution and competence
• In 2014 the UK subsea sector generated £8.9 billion in annual revenues (ca. 45% of global market) and directly employed ~53,000 people
• The global market is expected to grow significantly over the next decade and will present considerable opportunities for the UK service sector
Significant prospectivity

UKCS has 6bnboe YTF best estimate in mature areas
Unsanctioned potential

- **350+ unsanctioned discoveries**
  - **3.4bnboe technically recoverable**
  - **70% are small (<50mmboe)**

Various **technical challenges** such as:
- heavy oil
- tight gas
- HPHT
- fluid quality

- **40% are unlicensed** (to form part of 30th Licensing Round).
- **200 have fragmented ownership** (over 50 different operators)

Resources by region

- CNS
- WoS
- MF
- NNS
- SNS

Total P50 recoverable resources: **3.4bnboe**
Subsea standardization

Efficiency Task Force
Subsea Standardisation Project
Adopting a Simplified and Fit for Purpose Approach
Promote adoption and application of approach to prospects & future developments in UKCS

Subsea Standardisation Project: Adopting a Simplified and Fit for Purpose Approach
Application Guideline

December 2016

http://oilandgasuk.co.uk/etf-toolkit.cfm

Document provides an overview on how to apply fit-for-purpose approach to subsea projects and future developments to provide efficiency improvements & cost reduction.

Guideline provides a list of worked examples to help users gain a better understanding of their application.

Within guidance behaviours, cultures and practices are covered as these are instrumental to the adoption of change necessary to implement efficiency improvements.
Standardization approach

Standardize equipment (hardware) and methods for both new and existing subsea infrastructure to maximize compatibility, interoperability and provide reduced delivery times.

Simplify approach focusing on aligned standards and non-value adding specifications to eliminate superfluous detail and reduce complexity & provide a fit for purpose solution.

improved efficiencies and optimised solutions will reduce cost base
Efficient Tiebacks
Existing technologies available including:

- Mechanical hot taps
- Mechanically connected pipe
- Modular spooled pipe systems
- Composite pipe

Stand Alone Systems
Key technologies identified:

- Unmanned Production Buoys
- Mini FPSO
- Subsea Storage
- Subsea Factory

Focus on technologies to further reduce costs and enable small pool development
Oil & Gas technology centre

Government funding of £160m over 10 years matched by industry
East Kilbride subsea centre

£11.1m investment from TUV SUD and £4.9m R&D grant from Scottish Enterprise

OGA Technology Strategy unlocking small pools

- Allows production from ‘small pools’ to be metered on the sea bed before being commingled with other hydrocarbons for topsides processing
- Supports commercial agreements for the processing of fluids at host facilities
- Allows for optimal production management of the satellite field

Benefits

- Subsea multiphase flow meters to be tested at conditions much closer to those experienced in service
- Test range beyond anywhere else in the world
- Problems with performance would be detected before offshore installation

Results

- Greater accuracy and reliability of subsea multiphase metering
- Reduction in the financial exposure of operators

East Kilbride Centre opened in April 2016 supported by OGA & OGTC
A single compelling vision for the offshore oil and gas industry to add value

**Significant prize - Vision 2035**

- **Realize full hydrocarbon potential of the UKCS**
- **World class competitiveness**
- **Expand service sector range, market coverage, double exports**
- **Increase the prize by half again over the next 20 years**

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**Chart: Revenue/Turnover (£billion, 2016 prices)**

- **Baseline supply chain turnover from exports**
- **Vision supply chain turnover from exports**
- **Baseline gross production revenue**
- **Vision gross production revenue**

**Key Metrics:**
- **£150bn Additional turnover**
- **£140bn Additional gross revenue**
- **£380bn**
- **£420bn**
- **£500bn**

**Total value added**
- Increased UK supply chain turnover from capturing larger share of exports markets
- **MER UK**
  - Increased gross revenues from UKCS oil and gas production