
Scotland's Independent Expert Commission on Oil and Gas: Maximising the Total Value Added

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MAXIMISING THE TOTAL VALUE ADDED

Report of Scotland's Independent Expert Commission on Oil and Gas

June 2014

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FOREWORD

September 1964: The UK Government announced the award of the first offshore oil and gas exploration licence in the UK Continental Shelf ('UKCS').

We will shortly mark 50 years on from this and in the same month the Scottish referendum will take place. The Commission is thankful to the Scottish Government for the opportunity to produce this report, which is timely in its proximity to both of these events.

The Scottish Government commissioned this report to inform the debate in advance of the referendum, with an emphasis on ensuring the sustainable future of the UKCS. This showed considerable foresight. The recommendations within this report are therefore intended to provide direction to Government in shaping the future policy framework irrespective of the outcome of the referendum.

In gathering the information and evidence for this report the current record levels of investment contrasted starkly with the message of markedly reduced investment intentions – leading us to the conclusion that the UKCS has reached a critical crossroads.

While there are substantial remaining resources and much to be played for, the UKCS is no longer as attractive an option for investment as it once was and Government must recognise that the sentiment needs to swiftly shift from one of seeking to control access to a sought after resource, to one where investment must be attracted by the many positive features of doing business here.

If there is to be maximum value and longevity obtained from the remaining life of the UKCS, offering an opportunity of scale and significance to the economy, then a step-change in stewardship philosophy is needed.

The industry is making decisions now about their long-term investments, and such decisions will inevitably affect the future sustainability of the UKCS. At this critical crossroads the aim of Government should be to assure thoughtful stewardship and regulation, in a spirit of informed collaboration with industry. Government must recognise the prize that is being played for here in terms of the total value which the UKCS can continue to generate for the nation.

The immediate challenge for Government now is to steer a clear path towards a targeted policy framework which is stable, predictable and internationally competitive. Only this will secure the long-term and sustained investment needed to maximise the potential of the basin.

It is widely recognised that the remaining resources of the UKCS still represent a considerable prize and the need to 'extract every last drop' is commonly accepted. Support for Sir Ian Wood's *Maximising Recovery* Review has therefore been very strong within the industry, with a focus on a new strategy for Maximising Economic Recovery ('MER') and a new model of stewardship to deliver it. This has formed the starting point for the development of this report.

The Commission has sought to illustrate the imperative for achieving MER through looking at the Total Value Added ('TVA') generated by the sector for the economy as a whole. What is still absent is any real understanding of what overall *value* is generated by the production of hydrocarbons from the UKCS to the wider economy.

Without this clear understanding it is impossible to judge what is 'economic' in assessing what resources are recoverable. It is also impossible to design policies which will garner the vital future investment and maximise the potential value of the basin.

The Commission believes that clarity on the scale of the opportunity that this value proposition represents, should lead to the setting of an aspiration for additional value creation that will clearly set the tone for how the UKCS is to be managed in the future.

There is a considerable range of estimates of the total remaining hydrocarbons that could be recoverable from the UKCS, from less than 10 billion barrels of oil equivalent (Bboe) up to 24 Bboe,

and in some cases more. The Commission has taken 24 Bboe as the goal which should be targeted. This figure includes technically challenging and expensive resources, some of which are still to be found. However, it is also to some extent informed by recovery factors in existing fields which, with today's methods and technologies, will almost certainly be improved.

A dual approach for delivering MER and generating maximum TVA must set the agenda for Government, the new Regulator and industry, to ensure that we, as the UK or as separate Scottish and rest of UK jurisdictions, take action quickly to maximise the full potential of the UKCS.

This report has had a large number of contributors, and I would like to thank the industry and various stakeholders for their inputs, contributions, help and preparedness to educate me as we have developed this report. Others have helped in more detail for which I am truly grateful.

I would like to thank my fellow Commissioners for their time, patience and contributions and I am also truly grateful to Aberdeen University and The Robert Gordon University for their support in kind.

Melfort Campbell

EXECUTIVE SUMMARY

Key messages:

- **Securing the long term future of the UKCS**
- **Creating an internationally competitive fiscal and regulatory framework**
- **Proactive Stewardship: A Road Map to TVA**

Remit and Scope

- The Oil and Gas Expert Commission was appointed by the Scottish Government in advance of the September 2014 referendum.
- The Commission's remit was to consider options for the implementation of the key principles set out in the Scottish Government paper '*Maximising the Return from Oil and Gas in an Independent Scotland*'. Those principles are aimed at improving the production profile, and enhancing the climate for investment in the UKCS.
- The Commission has considered its brief to be the maximisation of value, as well as creating the means for assuring the long-term future of the UKCS. It has sought to establish findings which will influence future government policy in the years to come, irrespective of the outcome of the referendum.
- Throughout this report the term UKCS is used to refer to the existing UK Continental Shelf. In the event of a Yes vote in September 2014 all references will apply consistently to the Scottish portion of the existing UKCS and the rUK portion¹.

The Opportunity and the Challenge

- The Oil and Gas industry in the UKCS has reached a critical crossroads. While significant opportunities exist, the scale and imminence of the challenge has not been fully appreciated.
- With complex interdependencies influencing investment decisions in the UKCS, there is some urgency needed to ensure potential investment opportunities are not lost or stranded. Government and industry must act now if they are to overcome this challenge and secure a long-term and sustainable future for the UKCS.
- The Commission's view is that extracting the potential remaining 24 billion barrels of oil equivalent (Bboe) will generate considerable benefits for the economy and society more widely; representing a major opportunity over the next 50 years.
- In order to realise this opportunity, Government should ensure that the policy approach is appropriate for the changing investment environment. Future discoveries in the UKCS are likely to be smaller in size and more technically challenging, and therefore the balance of risk between industry and Government must be carefully considered.

¹ As will be determined in accordance with negotiations and principles of international law.

- It is important that Government takes action now to secure the required investment through creating an internationally competitive fiscal and regulatory framework which ensures stability and predictability. That framework must be sustainable, flexible and responsive to market forces.
- The main challenge is to adapt quickly to the transition of the UKCS from a province where high prospectivity attracted high levels of investment, to one where investment in late-life fields and more technically challenging resources is rewarded by a reasonable rate of return for the industry and for the nation.
- In order to address this challenge the Commission believes not only that there should be a strong focus on Maximising Economic Recovery ('MER'²) – but that there should be an over-arching emphasis placed on maximising the overall contribution of the sector to the economy: the Total Value Added ('TVA'³).

The Investment Climate

- Investment in UKCS field development is currently at record levels, but exploration activity and production levels are at a record low. There are many challenges to overcome in order to attract long-term and sustained investment in support of the achievement of MER and maximum TVA.
- Government and industry, with some urgency, should recognise the reduced investment intentions and adapt to the market forces currently prevailing in the UKCS and the global oil and gas sector, identifying and addressing the key barriers to investment.
- A targeted policy framework appropriate to the changing commercial environment and maturity of the province is now needed in order to maximise the return from the substantial remaining resources.
- Government should recognise the need for a fundamental change in approach, from one which sought to control access to a sought after resource, to one which seeks proactively to attract investment through creating the right fiscal and regulatory conditions.
- Investment is required in all areas of the industry; exploration, development, production, infrastructure, decommissioning and the supply chain – enabling the development of sustainable capability, skills and innovation.

Stewardship: A Road Map to TVA

- The Commission's view is that there should be a dual focus for future oil and gas policy and stewardship, essentially that policy should be:
 - a. built with the explicit aim of Maximising Economic Recovery, and
 - b. constructed so that Government and society benefit from the TVA generated by industry.
- The Commission believes that a clear understanding of TVA, and where and how it is generated, will enable Government to make well-informed policy assessments with a view to ensuring that maximum TVA can be achieved.
- The strategy set by Government must ensure that any changes to the fiscal, regulatory or licensing regimes are wholly cognisant not only of the impact on the oil and gas sector directly, but of the potential impact on the overall value to the wider economy.

² *The Maximising Recovery in the UKCS Review*, 24 February 2014, conducted by Sir Ian Wood on behalf of the UK Government. This report advocates for the adoption of Maximising Economic Recovery in the UKCS (MER) as the new shared strategy to be implemented by government and industry.

³ For fuller definition see page 15 and Box 3, page 26.

- The Commission supports the central recommendation of the Wood Review for the creation of a new Regulator to provide more proactive stewardship, and wholly endorse the imperative for swift action made clear within that report. However, the Commission believes that the agenda for the new Regulator must be set within the context of Government's over-arching strategy for achieving maximum TVA.
- The principal recommendation of this report is for Government to produce a Road Map setting out clear policies, and the manner in which the sector will be governed.
- The Road Map must create a new and more positive sentiment, that the UKCS is '**seeking investment and is open for business**', and should be produced in the context of a rolling 5 year strategy, staged in line with a comprehensive evaluation of the remaining asset value of the UKCS.
- This Road Map should include actions for the development of the skills, capability, innovation and technology required to achieve an overall increase in the strength and competitiveness of the domestic supply chain.
- As a basis for a new model of proactive stewardship the Road Map must seek to eliminate or mitigate the current impediments to investment and look at actions, structures and changes that are needed to facilitate the achievement of the over-arching objective of delivering maximum TVA.
- Government must set the parameters for the implementation of this strategy in the context of TVA, and take policy responsibility for the delivery of this ultimate aim.

The Fiscal Regime

- Stability and predictability must be central to the fiscal regime in the UKCS. Where the UKCS cannot promise the large opportunities it once could, it must be able to offer a stable and predictable regime – and one which recognises its place in the global market.
- Fiscal policy making has in the past been influenced by the short-term impact on production tax revenues, causing substantial uncertainty with negative effects on investment.
- The optimal fiscal regime should reflect the current and future context of the basin. As such, there is a need to re-assess the combination of tax rates and allowances which will fulfil these requirements.
- To maximise the benefits from the sector and its supply-chain, the future emphasis should be on encouraging long-term sustainable levels of investment, enhancing stability and predictability, and recognising the investment hurdles for investors.
- In the detailed design of the system there should be clear recognition of the significant capital cost associated with developing the remaining fields and incremental projects.
- Allowances should be transparent and predictable early in the evaluation stage of a project, and based on economic rather than physical factors.

Regulation: Governance and Licensing

- The emphasis of future regulation should be on high quality, proactive stewardship. The Commission believes that the new Regulator must utilise a combination of regulatory powers, persuasion and incentives.
- Proactive stewardship by the new Regulator must not only tackle the impediments to investment but also assist Government in ensuring the maximisation of TVA. It should provide advice in relation to the necessary investment in, and development of, skills, technology and innovation.

- There is a need for a change to the way in which oil and gas companies operate within the basin. At a corporate level there must be a shift to a new paradigm of complementarity and mutual advantage.
- The creation of a new culture of enhanced stewardship and collaboration will be a significant and critical step towards creating success, and accessing the potential remaining 24 Bboe or more.
- If voluntary and incentivised stewardship does not deliver, then further licensing obligations and statutory powers for the Regulator should be considered. Any measure should ensure that companies controlling production, and the factors affecting production, do so in a way that supports the achievement of MER and of maximum TVA.

Regulation: Health, Safety and Environment

- The UKCS has established a robust, world-leading health, safety and environmental regulatory regime.
- Government must build on the existing regime for regulation of Health, Safety and Environmental Protection with the continuing objective of making the UKCS the safest place to explore for and produce oil and gas worldwide.
- Health, safety and environmental regulation must be consistent with emergency response arrangements and the statutory requirements of the EU Offshore Safety Directive.

Decommissioning

- Government and the new Regulator should play a central role in developing a strategic approach to decommissioning with the aim of minimising decommissioning costs to the operators and the taxpayer and achieving the maximum economic extension of field life.
- A clear strategy is required to mobilise investment by the supply chain to ensure that technology, capability and capacity is in place, and that the TVA from decommissioning expenditure is optimised.
- To minimise the cost to both operators and the taxpayer, consideration should be given to encouraging a pipeline or cluster of decommissioning projects – creating economies of scale, sharing knowledge and techniques.

Technology and Innovation

- The exploitation of appropriate new technologies is one of the most important keys to the future success of the UKCS.
- While new technological advances have made a significant contribution to the UKCS, the level of investment in R&D in the UK has remained consistently and significantly lower than in its main competitor countries.
- It must be recognised and accepted that oil and gas related R&D is not solely the responsibility of the major oil/gas operators.
- Government and industry must work in partnership to further improve the international reputation and competitiveness of the indigenous supply chain.

Skills

- A window of opportunity exists to establish a world class generation of new professionals and the future visionary leaders of the oil and gas industry in the UKCS.

- There is an over-emphasis from industry on short term solutions and recruitment strategies to attract already skilled, qualified and experienced personnel, rather than on developing sustainable skills to meet future needs.
- A balanced mix of short, medium and long term objectives is required for sustainable talent and skills development and investment in the UKCS.
- In pursuit of maximum TVA, an assessment of skills capacity in the UKCS must be undertaken and a sustainable skills development plan produced: enhancing the development of an internationally competitive supply chain in the long-term, and ensuring provision of required skills to maximise production in the short to medium term.

Transition

- Regardless of constitutional change, the UKCS is now on the cusp of transformative change by necessity and as a result there are various transitional issues which must be given due consideration.
 - This report advocates a change in approach. This change, along with the full implementation of the recommendations within the Wood Review, the EU Offshore Directive and any changes that may occur as a result of the forthcoming Scottish referendum, must be managed and implemented in a way which encourages, and does not impede, investment in the UKCS.
 - In order to deliver continuity for the industry, there should be a coherent regulatory approach to the management and implementation of policy, whether under a single or dual jurisdiction, post September 2014. This will require government collaboration with a view to evolving policy which is consistent with achieving maximum TVA, encouraging investment and safeguarding the interests of society and the environment.
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KEY RECOMMENDATIONS

Stewardship

1. A road map must be established quickly for the future of the UKCS, ensuring the implementation of a clear strategy to maximise TVA generation for the nation.
2. Government and the new Regulator must be proactive in tackling the impediments to sustained investment, creating a positive sentiment for attracting investment and facilitating its enactment, implementation and embodiment.
3. Government must play a proactive role in developing the capability and competitiveness of the supply chain with advice and support from the new Regulator.

The Fiscal Regime

1. Government must seek to ensure international competitiveness, stability and predictability that is appropriate to the maturing environment of the UKCS and the competing investment environment globally.
2. The fiscal regime and policy approach must serve the purpose of creating and reinforcing the positive investment sentiment; any changes to the fiscal regime should be credible for the medium and long term, not only for short term purposes and set in light of achieving maximum TVA.
3. The simplification of the UKCS fiscal regime must be a key objective for government in the long-term. A number of specific and targeted improvements to the fiscal regime are recommended.

Regulation: Governance and Licensing

1. The over-arching strategy of MER must be implemented by the new Regulator, inclusive of the whole industry, and viewed in light of the ultimate goal of achieving maximum TVA.
2. The licensing regime must aim to achieve ambitious targets for MER as well as the higher aspiration of maximum TVA.
3. The new Regulator must have a formal right of consultation on fiscal or regulatory issue which could have an impact on investment or production in the UKCS.
4. Licence terms must be investigated as a means of ensuring greater certainty for operators investing in the UKCS, through incorporating a commitment to meaningful consultation with the Regulator and industry on any regulatory or fiscal changes and through formally placing MER and TVA as central to those considerations.

Regulation: Health, safety and Environment

1. The new Regulator in its stewardship role must in no way diminish the Health, Safety and Environmental regulation of the UKCS and must build on the aim of making the UKCS the safest place to explore for and produce oil and gas worldwide.
2. A single, strong, well-resourced and informed regulatory regime for health, safety and for environmental protection of the UKCS must be established with oversight of all relevant duties, in line with the EU directive.
3. The regulatory solution for health, safety and environmental protection, must be consistent with

emergency response arrangements and the statutory requirements of the EU Offshore Safety Directive.

Decommissioning

1. Government and the new Regulator must work with operators to reduce decommissioning costs and avoid premature decommissioning of UKCS assets.
2. The new Regulator must have the authority to delay, refuse or amend a decommissioning application where assets have the ability to continue making an economic contribution.
3. Industry, supported by Government, must develop a clear strategy for the investment in the development of new technology and capability to ensure the UK supply chain is able to optimise the TVA from future expenditure on decommissioning.
4. Government must give further consideration to whether it may be appropriate for selected parts of UKCS oil and gas structures to be left in place and used for other environmentally advantageous purposes.

Technology and Innovation

1. Government must be the catalyst for investment by the indigenous supply chain through the establishment of R&D and innovation demonstration programmes where optimal national benefit can be obtained.
2. In support of TVA, Government must expand investment in R&D in oil and gas both directly and through centres of excellence that can facilitate collaboration between operators, the supply chain and Government in relation to critical technology needs.
3. Processes targeting improved technology testing are needed to reduce the "time to market" of new technologies.
4. Government and industry must work in partnership to improve the international reputation, competitiveness and export record of the indigenous supply chain.

Skills

1. As a priority, Government must use its levers to counter the impact of long-term industry under-investment in skills, and the impact on the inflation of wages.
2. An excellent skills base must be established both to meet immediate and long-term future needs.
3. The Regulator must act as a catalyst for future investment in skills development from both industry and Government, through stewardship, funding, licensing and regulation.
4. A stronger future regulatory mandate will seek demonstrable competence across both core and contracted staff for duty holding companies.
5. Industry in the UKCS must work with academia to establish excellent technical and graduate programmes with the goal of establishing a world class generation of new professionals.

Transition

1. In relation to any regulatory or fiscal regime change within the UKCS, the aspiration should be for predictability, visibility and continuity over the short-term, minimum disruption in the medium term and clarity for the long-term, with the aim of encouraging, not impeding, investment in the UKCS.
2. In the event of a Yes vote:
 - Governments must facilitate a swift and transparent boundary determination to ensure certainty for industry;
 - The new Regulator must operate within a single regulatory framework with dual government

policies;

- Both Governments must adopt a collaborative approach with regards to the operation of the fiscal regime, with a view to maximising synergies, minimising compliance costs and a clear focus on providing clarity and certainty to the industry; and
- A single regulatory regime for Health, Safety and Emergency Response with dual government policy control is preferred, providing clarity and reducing transitional uncertainties in order to maintain continuity and to minimise the compliance costs for Government and industry.

REMIT AND SCOPE

1. The Oil and Gas Expert Commission ('the Commission') was appointed by the Scottish Government in advance of the September 2014 Referendum.
2. Its remit was to consider options for the implementation of the key principles set out in the Scottish Government paper '**Maximising the Return from Oil and Gas in an Independent Scotland**⁴'; providing an independent expert view on the optimum application of the oil and gas policy framework.
3. The principles outlined in the Scottish Government's paper are aimed at improving the production profile, and enhancing the climate for investment in the UKCS. For this to be achieved it is important that the policy framework supports the recovery of commercially marginal, but technically accessible, resources.
4. It is the Commission's view that this can be delivered through ensuring that there is a stable and predictable fiscal environment, which is competitive internationally, and which is underpinned by an effective, fair and transparent licensing and regulatory regime. This has been the primary focus of the work of the Commission.
5. Irrespective of the outcome of the referendum, following the direction provided by the Scottish Government, the Commission has sought to:
 - a. present the optimal conditions which will secure a legacy for the Oil and Gas industry as a whole, and
 - b. establish findings which influence future Government policy in the years to come.
6. The Commission has considered its brief to be the maximisation of value, as well as creating the means for the assurance of the long-term future of the UK Continental Shelf (UKCS⁵). Therefore, the central aim of the Commission has been to:
 - a. determine how to generate maximum value from the remaining hydrocarbon resources and the associated supply chain;
 - b. identify the obstacles to maximising oil and gas investment and economic recovery; and
 - c. propose potential solutions as to how these might be overcome by government intervention.
7. The Commission has also considered certain issues relating to the governance of the sector which would follow any transition to separate Scottish and rest of the UK jurisdictions.
8. In gathering evidence, the Commission has elicited industry's views on what Government's role should be in achieving these objectives.
9. It has held meetings with, and sought written evidence from a broad range of stakeholders across all sectors of the industry – including large, medium and small operators. The Commission also published and promoted an online survey hosted by Robert Gordon University which allowed stakeholders to contribute their views and ideas.

⁴ <http://www.scotland.gov.uk/Publications/2013/07/5746>

⁵ Throughout this report the term UKCS will be used to refer to the existing UK Continental Shelf. However, in the event of a Yes vote in September 2014 all references should be read as applying consistently to the Scottish portion of the existing UKCS (as determined in accordance with principles of international law) and the rUK portion of the existing UKCS.

1. INTRODUCTION

1. The history of Oil and Gas in the UKCS has been one of considerable success.
2. The industry has succeeded in producing over 42 Bboe to date from a relatively inhospitable environment, generating a domestic support industry that is competitive, recognised for capability and technology and is succeeding in global markets.
3. The success of the industry is illustrated by;
 - buoyant employment levels across the sector and supply chain;
 - improved workforce demographics;
 - record interest in recent licensing rounds;
 - world leading expertise in supply chain sub-sectors (e.g. sub-sea technology);
 - unique experience of technically challenging fields such as High Pressure-High Temperature (HP-HT) developments; and
 - record levels of international activity and exports by the supply chain.
4. Notwithstanding these achievements, the province is now facing a range of challenges as a mature basin, including:
 - falling production levels and production efficiency;
 - development and operating costs at record high levels;
 - exploration activity at a near 50 year low;
 - average salaries continuing to rise (increasing by 35-40% since 2006) putting pressure on companies' wage bills; and
 - the number of people needed to produce a barrel of oil has risen from 18 in 2006 to 45 in 2012.
5. As a result, the costs of production are rising, with a diminishing return. This unsustainable commercial environment must be understood and addressed through an effective policy framework and stewardship model.

A Crossroads

6. It is the Commission's view that the oil and gas industry has reached a critical crossroads: while significant opportunities exist, the scale and imminence of the challenge has not been fully appreciated.
7. With complex interdependencies influencing investment decisions in the UKCS, there is some urgency needed to ensure potential investment opportunities are not lost or stranded. Government and industry must act now if they are to overcome this challenge and secure a long-term and sustainable future for the UKCS
8. There is much emphasis placed on the current reported record levels of investment. In the short term, there are a number of existing fields receiving record levels of investment. However this is masking reduced investment in exploration and production, diverting attention away from the challenges which must be overcome.
9. A paper published by the UK Government in April 2014 estimated remaining potential production from 2014 to 2050 to be 10.2 Bboe⁶. This level of recovery would represent a substantial failure for the UKCS as a whole, resulting in a great loss of economic value, and runs contrary to the MER strategy.
10. This estimate for the next 35 years is less than half the estimate of 24 Bboe potentially recoverable overall, which has been used in previous Department of Energy and Climate

⁶Scotland Analysis: Energy. UK Government publication, 9 April 2014.

Change⁷ (DECC) and recent Oil & Gas UK (OGUK) forecasts⁸. It follows that if production between now and 2050 is as low as 10.2 Bboe, this will inevitably jeopardise the basin's ability to achieve its maximum potential overall.

11. The Commission is therefore of the view that Government should provide a policy framework consistent with recovering 24 Bboe, though recognising that the development of new capabilities and technologies could result in an increase to this figure. This policy framework must build on the understanding that:
 - I. strengthened incentives for further investment in infrastructure will stimulate and accelerate production, and in turn, enhance the economics of marginal fields;
 - II. the supply chain must be challenged and incentivised to develop the technologies and skills to enable the economic and rapid development of smaller fields, and to improve recovery from existing fields; and
 - III. further opportunity exists to develop indigenous technologies, capabilities and skills to build production and service provision, reducing the dependence on imports.
12. A policy framework with these principles at its core would generate substantial value from additional production and supply chain activity.

The Opportunity

13. The UKCS will remain an important offshore oil and gas province for many years to come, with a potential 24 Bboe or more still to be recovered. However, given the maturity of the province, a sizeable proportion of those remaining resources will be technically difficult to reach, and more expensive to recover than the 42 Bboe already extracted. This presents a range of challenges.
14. The current policy framework needs to swiftly evolve and reflect the changing dynamics of the UKCS. The Commission believes that with appropriate and well-targeted Government intervention the UKCS could be transformed into a global leader amongst the many mature oil and gas provinces worldwide.
15. Government must focus real effort on innovative policies and practice, which support the development of technologies and capabilities to achieve the target of recovering the remaining 24 Bboe. As well as maximising oil and gas production, the result would also be improved energy security, and the continued growth of an indigenous, high value, global supply chain.
16. Government and all parts of the industry must work closely together if they are to realise the significant opportunity that the potential remaining 24 Bboe represents. Only through a more collaborative approach can the barriers to investment in exploration and production be addressed.

The Challenge

17. The corporate landscape and investment dynamics in the UKCS are continually evolving. The basin was once dominated by international super-majors with financial capacity to fund the exploration and development of major field discoveries. These companies were the architects of the major arterial export routes that underpin the current UKCS infrastructure.
18. However, today's oil and gas business is more diverse. It harnesses the skills of independent oil and gas companies that come in many different shapes and sizes. This varied range of business models has emerged in direct response to the challenges and opportunities of the market.
19. The main challenge is:

⁷<https://www.gov.uk/oil-and-gas-uk-field-data> - From this analysis the Wood Review takes the low case outcome to be 12 Bboe and the high case to be 24 Bboe.

⁸<http://www.oilandgasuk.co.uk/2013-economic-report.cfm> - Oil & Gas UK forecasted in 2012 and 2013 that there are between 15 and 24 billion boe to be extracted from the UKCS.

To adapt quickly to the transition of the UKCS from a province where prospectivity attracted high levels of investment, to one where investment in late-life fields and more technically challenging resources is rewarded by a reasonable rate of return for industry and for the nation ('the Challenge').

20. The Commission has focussed on the two key components of this challenge:
- I. ensuring the continuing success of the UKCS, through overcoming current challenges and Maximising Economic Recovery; and
 - II. ensuring that the broader opportunities and additional value from oil and gas activity are realised for the wider economy and society.

Maximising Economic Recovery ('MER')

21. The Commission welcomes Sir Ian Wood's *Maximising Recovery in the UKCS* Review and its assessment of the governance model applying in the UKCS. It fully supports the proposed solution: the creation of a new arm's length Regulator for the UKCS with increased powers to enable effective high quality, proactive stewardship for the delivery of the MER strategy.
22. The changes brought about by this approach will address many of the regulatory failings in order to successfully achieve the first component of the Challenge. The Commission believes that an innovative approach to stewardship and regulation in the UKCS is needed in order to guarantee the transition to a new paradigm of oil and gas activity in the UKCS.
23. The new Regulator must have the ability and power to evaluate all of the remaining assets of the UKCS and develop a clear strategy for their development.
24. As long as this new approach is implemented swiftly, cost effectively, with minimal bureaucracy and with the full cooperation of the industry, this could enable the UKCS to capture some of the benefits that a National Oil Company can generate, without the need to form one⁹.

Maximising the Total Value Added ('TVA')

25. To address the second component of the Challenge, the Commission is of the view that there needs to be a stronger emphasis from Government on maximising the overall contribution of the sector to the economy: the Total Value Added.

Box 1: Total Value Added

Total Value Added is the sum of 3 components namely;

1. that derived directly from the UKCS in the wages, profits and related taxes from production activity;
2. the indirect contribution from wages, profits and taxes of the supply chain; and
3. the extra induced activity of the supply chain, in export markets and other non-oil sectors, from UKCS activity in the form of further wages, profits and taxes.

TVA is therefore a measure of the maximum value added by the whole industry to the economy.¹⁰

⁹ See Box 5, page 44.

¹⁰ For a fuller definition see Box 3, page 26.

26. A greater focus on maximising TVA will result in a broader governmental, and wider societal, understanding of what the oil and gas sector contributes, and as such, what opportunities remain. This will in turn enable an assessment of the degree to which factors considered to be impeding or encouraging exploration, investment and production, also have an impact on the wider economy.
 27. The Commission strongly believes that the domestic supply chain must be presented with the opportunity to be innovative, developing the technology and capabilities necessary to produce the potential remaining 24 Bboe.
 28. Maximum value to the economy can be achieved directly from that additional production, but also through developing the strength and capability of the domestic supply chain, ensuring its competitiveness in every oil and gas province worldwide, while building the indigenous skills base and enhancing future employment.
 29. At this critical crossroads, the Commission intends to provide advice to Government, the new Regulator and to industry on how to maximise the opportunity and TVA from the UKCS.
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2. THE UKCS INVESTMENT CLIMATE

Key messages:

- **Investment in UKCS field development is at record levels**
- **Exploration activity and production levels are at a record low**
- **Challenges remain to ensure long-term and sustained investment at all levels in support of the achievement of MER and maximum TVA**
- **It is critical that Government and industry recognise and adapt quickly to the market forces currently prevailing in the UKCS and the global oil and gas sector**

Changing Dynamics of the UKCS

A Maturing Basin

1. The first oil and gas licences were granted almost 50 years ago.
2. Since production began the oil and gas industry has made a substantial contribution in the form of tax receipts to the UK Exchequer, paying more in corporation tax than any other industry. It is the largest industrial sector of the economy, in terms of its contribution to GDP and industrial investment.
3. The industry's impact is further reflected by the significant contribution it has made and continues to make to the UK balance of payments and the employment it generates. Oil and Gas UK estimates that the sector now supports 450,000 jobs across the UK, with half of those in Scotland.
4. The presence of the oil and gas industry in the UK has led to the creation of a sophisticated supply chain to service the offshore industry. There is now a cluster of world class companies headquartered in Scotland and the UK with key strengths in areas such as facilities and project management, subsea technologies, well-management and training services.
5. The sector has an on-going role to play in ensuring security of supply, and in support of the transition to a low carbon economy. In 2012, the oil and gas industry produced 67% of UK oil demand and 53% of gas demand, and it is predicted that in 2030, oil and gas will still provide 70% of the UK's primary energy requirements.¹¹
6. Initially the very largest international oil companies were attracted by the scale of the prospects. It required their financial and technical capability to develop and exploit the resources in fields such as Forties and Brent.
7. These fields required infrastructure to export production to market. This integral infrastructure underpins current and future production, and requires continued investment to ensure it remains fit for purpose.
8. Through the adoption of new techniques and technologies, the industry has continued to evolve, pushing the boundaries of possibility within the UKCS. This has enabled higher levels of recovery of proven resources, extended field life and increased estimates for total recovery in the basin.

¹¹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239937/uep_2013.pdf

9. One particular example is the Forties field:

Box 2 : Field Life Extension – Forties Field

- The Forties field, discovered by BP in 1970, contained an estimated 4.2 to 5.0 billion barrels of oil, with production peaking at over 500,000 barrels per day (boe/d).
- When Apache purchased the field in 2003 it was estimated to have 144 million boe of proven reserves remaining and production was expected to cease in 2012.
- However, as a result of the transfer of ownership and a new innovative approach to enhancing production efficiency, the field has produced nearly 200 million boe since 2003, with 114 million boe of proven reserves remaining¹².

10. As a mature province, the UKCS now faces a new set of challenges, but these must be seen within the context of the huge potential that still exists through the extension of brownfield recovery and through exploration and exploitation of frontier areas such as West of Shetland.
11. In light of the substantial opportunities that continue to emerge, investment in UKCS field development is currently reported to be at record levels. In its 2014 Activity Survey, Oil and Gas UK confirmed that in 2013, the UKCS experienced the highest rate of capital investment for more than three decades at £14.4 billion with investment more than double 2010 levels.¹³
12. The corporate profile of the basin has changed considerably and the fiscal and regulatory regimes have evolved on an incremental basis to keep up with the transformation that is underway. The changing and varied nature of investment in the UKCS reflects the changing and varied nature of the opportunities.
13. All of these factors have an influence on the current investment outlook and underpin the opportunities and barriers that the sector currently faces.
14. There is now growing competition internationally from many new and growing offshore regions. Government must recognise the need for a fundamental change in approach, from one which sought to control access to a sought after resource, to one which seeks proactively to attract investment through creating the right fiscal and regulatory conditions.

Regulatory Regime

15. The changing dynamics of the basin are contributing to a more complex commercial environment. This by its nature requires a more proactive stewardship model in order to realise the full potential of the UKCS. The Wood Review highlighted that the current model of stewardship is not adequately resourced or empowered to perform this role and advocates for the creation of a new arm's length Regulator to rise to this challenge.
16. The Commission recommends that the new Regulator must have enhanced resources and powers to encourage, and, if necessary, enforce the necessary collaboration between operators and with the supply chain, to overcome the challenges facing the UKCS. The emphasis of future regulation should be low on bureaucracy and high on quality, proactive stewardship.

¹² http://www.apachecorp.com/Operations/Capturing_value/Forties_field_acquisition/index.aspx

¹³ Oil and Gas UK Activity Survey 2014

17. The new Regulator will not have responsibility for Health, Safety or Environmental Regulation – which has been established in the UKCS as a robust, world-leading regime. However, it should be noted in this context that effective policy implementation and compliance in Health, Safety and Environmental Regulation has the potential to contribute greatly towards the achievement of MER and TVA through enabling, not impeding, activity and investment, and building on the aim of making the UKCS the safest place to explore for and produce oil and gas worldwide.

Fiscal Regime

18. The offshore fiscal regime applying to the UKCS should set a stable and internationally competitive investment environment, allowing maximum long-term value to be achieved.
19. Stability, predictability and international competitiveness should be the key principles underpinning the fiscal regime, facilitating the delivery of long-term investment to Maximise Economic Recovery and maximise the generation of TVA over the life of the province.
20. Alongside this, the key objectives must be to collect a fair share of the economic rents for the state, while encouraging investment in exploration, development and production. However, the current system has become very complex in the way that it targets these twin objectives.
21. Since the turn of the century, a relatively short period in the life of a major petroleum province, the UKCS has witnessed three major tax increases. All of these took the industry by surprise and were followed by the gradual introduction of several field allowances for the Supplementary Charge and a range of other changes. Investors are as a result very conscious of the instability and unpredictability of the regime.
22. The various field allowances are designed to encourage investment in new fields and have made a significant positive contribution. However, at the time when investors are appraising projects, it is often unclear whether a field allowance will be available for a specific project. Negotiations with Government often take place on a case by case basis and have uncertain outcomes. This does not facilitate swift decision-making or adequate transparency for investors.
23. The result is a highly complex offshore tax system. For mature fields developed prior to March 1993 the headline tax rate is 81%, with Petroleum Revenue Tax (PRT) being charged at 50% on those fields. For fields developed after 1993, the headline rate is 62%, with Corporation Tax (CT) at 30%, and Supplementary Charge (SC) at 32%.
24. Effective rates are often significantly lower because of the application of field allowances. However, it tends to be the headline rates which attract greatest attention from potential investors.
25. Oil prices have increased substantially over the last decade and there has been rapid cost inflation in the sector. With the average size of discovery declining and a prevalence of costly HP/HT, heavy oil, and tight gas fields the investment environment has become more challenging.
26. Against this background, there is a clear need to align the taxation system to the current and emerging environment. This requires a scheme which ensures, not only that projects which are economic before tax remain commercially acceptable after tax, but that licensees contemplating long-term investments can be confident that their tax liabilities will be reasonably predictable.
27. The system should incorporate an inherent and appropriate flexibility in response to external factors, particularly oil and gas price fluctuations and cost changes. This requires the system of allowances to be responsive to such changes.
28. In designing the structure for the longer term it may also be appropriate for the relationship between headline tax rates and allowances to be reconsidered. In this context it is important to recognise that the great majority of future fields are likely to receive a field allowance, albeit that this cannot be predicted with certainty. This prompts the suggestion that lower tax rates with modified allowances could incentivise new developments whilst producing a simpler system.

Requirement for Sustained Investment

29. In order to unlock the full potential of the UKCS and maximise TVA, it is critical that Government and industry recognise the market forces currently prevailing in both the regional and global oil and gas environment.
30. The remainder of this chapter therefore considers the key areas of UKCS activity that require sustained investment and highlights the key challenges now facing the sector, which are having or are likely to have an impact on future levels of investment.

Exploration and Appraisal

31. The number of exploration wells being drilled across the UKCS has fallen to critically low levels and this is damaging the potential for future new field development. Exploration over the past three years has been at its lowest since 1965. OGUK cite the shortage of rigs and access to finance as the two key reasons for this current low level of activity.
32. Exploration and appraisal drilling decreased from 53 wells in 2012 to 44 in 2013. The decline is due mainly to a drop in exploration drilling from 22 wells in 2012 to only 15 in 2013 and expenditure fell by £0.1 billion to £1.6 billion¹⁴.
33. Commenting on the decline in exploration in the UKCS, the latest Oil and Gas UK Activity Survey stated: *"Exploration drilling has been on a downward trend since it first fell sharply in 2009 due to the collapse in oil price and the financial crisis which impacted the exploration and production sector. There was a further sharp fall in 2011 coinciding with the increase in the Supplementary Charge."*¹⁵
34. Alongside low levels of activity, exploration success has also been low, with less than 150 mboe of new resources being discovered in the past two years. This is well below the potential level of resources still believed to be recoverable.
35. A number of reasons for this have been identified, including;
 - Prospective discoveries are considered too small to satisfy the materiality requirements of large operators;
 - Smaller operators have encountered difficulty raising capital for exploration;
 - Lack of availability and high cost of drilling rigs;
 - Lack of appropriate targeted fiscal incentives for exploration;
 - Difficulties relating to the availability, sharing and quality of seismic and other subsurface data;
 - Concerns over fiscal stability and predictability; and
 - Poor resource management (e.g. not pooling rig requirements).

Field Development

36. Against the backdrop of record levels of investment it is important to recognise that recent high levels of investment expenditure are concealing the significant challenges the industry currently faces at the field development phase.
37. The number of wells drilled for development/production purposes has declined significantly since the early years of this century. In 2001 as many as 286 development wells were drilled, but in the period 2009-2013 the annual rate has been in the range of 120 to 131¹⁶.
38. According to OGUK field investment is likely to fall sharply over the next few years¹⁷. It is important to develop a clear understanding of the reasons for this prospective reduced

¹⁴ Oil and Gas UK Activity Survey 2014

¹⁵ Ibid

¹⁶ DECC: <https://www.gov.uk/oil-and-gas-wells#drilling-activity>

investment, which are varied depending on the investor's perspective, and the specific issues that need to be addressed in undertaking a project.

39. This prospective underinvestment demonstrates to some extent investors' perception of the future of the UKCS, and its competitiveness in global terms.
40. The Commission is of the view that the barriers to investment in this area can and should be overcome. Enhancing the level of exploration, appraisal and development activity and the success rates achieved will be key factors in the overall longevity of the basin.
41. Factors impacting upon reduced investment in field development include:
 - Access to finance;
 - Uncertainty over tax allowances;
 - Access to infrastructure;
 - Global competition for investment;
 - Smaller less commercially viable fields; and
 - Escalating costs.

Production and Efficiency

42. In 2013 production averaged 1.43 million boe per day but many operators expect it to rise in 2014. Oil and Gas UK's central case assumes that production will rise gradually to around 1.7 mboe per day in 2018¹⁸ due to new field start-ups and fields coming back on stream.
43. However, production on the UKCS has fallen by 38% over the past three years, amounting to 500 mboe per day. It is believed that around 360 mboe of this decline was lost due to decreased "production efficiency"¹⁹, which has fallen to record lows. This is costing industry and Government billions of pounds in lost revenue and jeopardising the long-term sustainability of the basin.
44. DECC estimate that production efficiency on the UKCS has fallen from 81% in 2004 to just 60% in 2012. This trend is supported by McKinsey analysis, which shows that over the past decade, asset production efficiency has declined by over 1 percentage point a year across the North Sea and is now at record lows in both the UK and Norway.²⁰ There are only four live Enhanced Oil Recovery (EOR) schemes being employed currently in the UKCS, which suggests that the basin is under performing in this area.
45. The industry has started to respond through initiatives now underway by joint government-industry bodies like PILOT and its Production Efficiency Task Force. The value generated through tackling the production efficiency challenge in the UKCS would be considerable. This is true not just of the associated increase in current production and revenue, but also in extending field life across the UKCS.
46. Production efficiency rates are expected to rise going forward, contributing to the more optimistic outlook for production rates. However, significant new investment and attention is now needed to be paid by the operators and by the new Regulator, in order to improve production efficiency to the required levels.
47. Factors contributing to the decline in production and production efficiency levels include:
 - Inadequate stewardship by the regulator;
 - Lack of investment in new infrastructure and in maintaining existing infrastructure;
 - Inadequate investment in inspection, maintenance and repairs by operators;
 - Lack of development and use of EOR and other technologies for improving recovery rates;
 - Insufficient oversight of development plans and their impact on overall UKCS production, such as access to infrastructure issues negatively impacting on development decisions; and

¹⁷ Ibid.

¹⁸ As above. This estimate carries an uncertainty of +/- 0.3 million boepd

¹⁹ Wood Review, p.5.

²⁰ *Tackling the asset production efficiency crisis in the North Sea*, Oil and Gas Practice, McKinsey & Company, April 2014

- Low levels of collaboration between operators.

Specific Barriers to Investment

48. Despite record levels of investment by the industry, there are a number of specific investment challenges and opportunities that must be considered. The key issues impacting on the sustainability of UKCS investment are considered in turn below.

Escalation of costs

49. A prominent issue for industry is the underlying escalation of costs in the basin. The UKCS is a mature province, therefore remaining oil and gas resources are likely to be in smaller accumulations, in more expensive frontier areas such as West of Shetland, or characterised as HP/HT, heavy oil, or tight gas. New developments will face increased complexity and higher cost. Much of the straightforward oil and gas resources have been developed, and the future fiscal and regulatory framework needs to recognise these factors.

50. The large increase in capital expenditure in recent years is therefore due in part to the relatively high costs of several large projects, which include field extensions and redevelopments as well as incremental recovery projects.

51. It is estimated that the development cost per barrel has risen fivefold in the last decade²¹ reflecting falls in the average size of new fields and significant cost inflation. Operating expenditure in 2013 rose by 15.5% to an all-time record of £8.9 billion,²² whilst production fell. Average unit operating costs are now £17/boe and the number of fields with an operating cost of more than £30/boe has doubled in the last year.²³

52. Whilst this expenditure contributes valuable income to the wider supply chain, it adds to the operator's costs and reduces the attractiveness of the UKCS for investment.

53. These rising costs come against a backdrop of a flat oil price and a gas price which is around 50-60% of the oil price. The return on prospective investment has therefore reduced and with it the competitiveness of UKCS investment internationally due to the increased cost of development per barrel.

Decommissioning costs and uncertainty

54. Another factor impacting investment now and in the future is the decommissioning of facilities and infrastructure in the UKCS.

55. Decommissioning represents both a major challenge and a major opportunity for oil and gas operators and the supply chain. Oil and Gas UK forecast that cumulative decommissioning expenditure will reach £40.6 billion (2013 prices) by 2040, and it accounted for 3.5% of total spend in 2013.²⁴

56. The UK Government's introduction of the Decommissioning Relief Deed and the Scottish Government's confirmation it will honour that commitment in an independent Scotland is most welcome. However, evidence suggests that escalating decommissioning cost estimates are still impeding negotiations on the transfer of assets to new players able to delay the need to decommission.

Access to Finance: The changing nature of investors

²¹ Wood Review 2014

²² *ibid*

²³ OGUK Activity Survey 2014

²⁴ OGUK Activity Survey 2014

57. The nature of UKCS investment is changing. There are examples of large fields in late-life being passed on to smaller companies with the ability and cost base to gain ever increasing recovery factors. The need for smaller specialists in exploration, development and production, has very much broadened the scale and business models of companies investing in the UKCS.
58. Access to finance has long been an issue in the upstream oil and gas industry, which the global financial crisis brought more sharply into focus. For the UKCS this has coincided with a general requirement to broaden the investor base and attract agile, entrepreneurial, and therefore often smaller, players. This is essential to ensure that the prevailing challenges of improving recovery from existing fields and the development of more difficult oil and gas fields are overcome and economic recovery is maximised.
59. Government needs to be aware of and develop policies that will help investors in this environment. Policies must address access to finance issues in relation to a company's balance sheet as well as in relation to the costs it incurs and the revenues it generates. This will help to ensure that both reinvestment and new investment are attracted to enhanced recovery from existing fields, as well as new exploration and development.
60. Government can seek to encourage banks and providers of equity finance to provide finance to the oil and gas sector – through the Business Investment Bank for example. A positive business environment created through the fiscal and regulatory regime will also help to alleviate these issues.

Access to Skills

61. The competition for scarce talent in the UK and internationally, within oil and gas companies and the broader supply chain, is constraining the market and affecting productivity and costs. The undesirable consequences of greatly-inflated wages, an over-reliance on a contractor workforce, and continued poaching need to be fully understood.
62. With high demand for skilled labour there is a lack of clarity in relation to the respective roles and responsibilities for skills development and delivery.
63. There has been too great a focus on employing skills rather than developing sustainable skills to meet the future needs of the industry. This has resulted in a tendency towards short-term solutions and recruitment strategies to attract skilled, qualified and experienced personnel, rather than on enhancing the stream of talent coming through from schools, colleges and universities. This is a recruitment culture which has perpetuated skills shortages and driven salary and employment cost inflation in the sector.
64. Whilst there are existing centres of excellence in areas such as subsea, these are not backed by the skills development infrastructure needed to consolidate and secure future advancement of existing and yet to be developed centres of excellence.

Development and uptake of new technologies

65. The level of oil and gas related research and development being undertaken in the UK has been consistently well below the level of the UK's main competitors.
66. Government focus on R&D in oil and gas has been primarily directed at the level of the oil majors. Investment by Government has as a result been gradually withdrawn since the late 1980's, and this has been matched by low levels of investment in R&D by the industry.

67. Whilst it is very difficult to quantify, it is estimated that investment by oil and gas companies in R&D is around a third of the UK average at 0.3% of sales²⁵. This is compared with the UK average of 1.1% and the Norwegian average of 4%.
68. Despite this underinvestment across the whole industry and particularly by the indigenous supply chain, the industry has achieved a strong performance in certain areas, such as sub-sea technology. With a relatively small re-investment by Government in growing or developing areas to stimulate the competitiveness of the UK supply chain, substantial returns and spill-over benefits could be generated.
69. Whilst many domestic companies have continued to thrive, developing and bringing innovation and new technology to the market, the absence of Government led investment and the catalysing effect it can have, is likely to be a factor in the UK continuing to trail the US, Norway and France in supplying the global industry.

Access to and lack of investment in infrastructure

70. The ability of 3rd parties to access appropriate infrastructure for the purposes of field development, exports and exploration is currently being inhibited by a lack of stewardship from the Regulator, and by the cost of accessing such infrastructure.
71. Terms and tariffs are largely determined by the owner of the assets and set in line with narrow commercial interests. There are examples of protracted negotiations and failures to reach agreement, contributing to further driving up costs in the basin and prohibiting valuable activity from taking place.
72. A proactive approach to ensuring 3rd party access to infrastructure has the potential to turn what is currently a barrier to investment in to an enabler of increased recovery and value generation.
73. The impact of inadequate levels of infrastructure maintenance activity on production in recent years has been stark. It is very important that existing critical infrastructure is maintained to an appropriate standard to enable the extension of its life prior to decommissioning. This will also facilitate further field development and exploration through the use of that infrastructure.
74. Stimulating and accelerating production, field development and exploration will provide the incentive for further investment in infrastructure, which in turn can enhance the economics of marginal fields.

Legal and Commercial constraints

75. The Wood Review cites the UKCS as being seen as 'one of the most difficult and adversarial legal and commercial basins in the world', characterised by 'risk aversion to the detriment of value creation'.
76. As a basin it presents a complex scenario for entrants in terms of the Fiscal, Regulatory and Licensing regimes, which raises the cost of entry and impedes investment. The approach of operators and the Regulator currently lacks the required focus on or interest in MER and TVA.

²⁵ *The 2010 R&D Scoreboard, Top 1,000 UK & 1,000 Global Companies by R&D Investment* - Department for Business, Innovation & Skills

Lack of sharing of information and data

77. The ability for new explorers to access existing seismic and well data is hampered by an unwillingness from operators to readily share this information, and a lack of involvement from the Regulator in facilitating this to encourage investment, increase exploration activity and prevent the need for repeat or additional unnecessary expenditure to gather already acquired data.
78. The acquisition of new data can be very expensive and there is a lack of collaboration on the part of the operators to share these costs and the results proactively.

Instability in the fiscal regime

79. The oil and gas sector exhibits characteristics that require special consideration in terms of economic policy and taxation. These characteristics include: revenue streams which are inherently uncertain and are secured over the long-term, significant up-front and decommissioning costs, and a range of technical and financial risks. The efficient collection of economic rents in practice has to reflect these complexities.
80. Translating this into a practical tax system has proved to be a fraught subject over many years, resulting in the current system in the UKCS which is now very complex in its operation due to its ad hoc development in response to specific short-term issues.

Overcoming the Barriers

81. In order for the UKCS to attract the sustained investment it needs and to ensure the full value from the UKCS is attained, oil and gas must occupy a prominent place within a cohesive energy policy. The short-term approach of Government to policy, fiscal management and ministerial and official appointments contrasts with the inherent long-term perspective that is taken by industry in making investment decision and planning.
 82. In recognition of the economic opportunity that the UKCS still represents, Government strategy needs to be highly ambitious and well-balanced to encompass the needs and strengths of the industry as a whole. The broader energy policy framework must fully acknowledge this economic aspiration.
 83. Through further discussion of an appropriate stewardship model and fiscal and regulatory regimes for the UKCS, this report will outline how many of the challenges and barriers identified in this chapter can be addressed.
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3. STEWARDSHIP: A ROAD MAP TO TVA

Key Messages:

- **An informed government strategy with a dual focus on achieving MER and generating maximum TVA: setting the high level agenda for good stewardship**
- **Creating a positive sentiment for attracting investment and tackling the impediments to investment**
- **A voluntary collaborative partnership between industry, government and the new Regulator**
- **Proactively developing the capability and competitiveness of the supply chain**

A Dual Focus: MER and TVA

1. The UKCS has produced 42 Bboe to date and there is potential for a further 24 Bboe or more still to be recovered. In recognition of the technical challenge and higher cost of developing these additional resources, and of the potential value generated for the broader economy, the Commission believes that a dual focus for future policy and stewardship should be adopted. That policy should be:
 - a. built with the explicit aim of Maximising Economic Recovery, and
 - b. constructed so that government and society benefit from the TVA generated by industry.
2. Developing innovative policies and practices that not only attract the required investment but also enable the development of the technologies and capabilities in the industry will be essential to underpinning the achievement of this dual policy focus.

Box 3: Total Value Added: 'TVA'

- A healthy UKCS is a pre-condition for maximising the potential for the supply chain. A key recommendation of this report is therefore the need to procure a clearer understanding of the TVA created for the overall economy by the oil and gas industry. This will enable a better understanding of the interaction between, and therefore the management of, tax and regulation – in the context of the overall generation of value to the broader economy.
- TVA is the sum of 3 components namely (1) that derived directly from the UKCS in the wages, profits and related taxes from the production activity, (2) the indirect contribution from wages, profits and taxes of the supply chain, and (3) the extra induced activity of the supply chain, in export markets and other non-oil sectors, from UKCS activity in the form of further wages, profits and taxes. TVA is therefore a measure of the maximum value added by the whole industry to the economy. Optimising this should be the objective of Government strategy.
- Whilst energy security, balance of trade, exports, R&D and technology development all contribute to the overall picture, corporate and employment taxes, both direct and indirect, also generate substantial value for the economy. Furthermore, if the UK supply chain, both indigenous and inward invested, develops the technologies and capabilities to increase the total

extraction of hydrocarbons from the UKCS, the long term value added to the economy will last well beyond the cessation of production in the UKCS, by taking new technologies, services and skills across the globe.

- This report advocates using fiscal, regulatory and licensing levers to maximise the overall economic recovery (MER) and ultimately to maximise the TVA generated from the remaining national resource.

3. Implementing the Wood Review in the context of TVA will only be achieved through a more collaborative approach between Government, the new Regulator and all parts of the industry. This will greatly change the perception of the sector's economic and societal contribution, and embed a dynamic energy industry which will continue to contribute sustainable value to the economy long after UKCS production has ceased.
4. Developing an understanding of where and how TVA arises, and how it can be maximised is vital to informing and justifying Government policy and practice. There are a range of potential benefits from developing a policy framework on this basis, including:
 - **Improving the balance of trade** – policy options that maintain domestic production and encourage oil and gas exploration and development will help to reduce net imports and could be a key feature of any import replacement strategy. This will improve the balance of trade and subsequently the balance of payments position;
 - **Improving the reach and reputation of domestic companies** – extending the life and boosting the production profile of the UKCS will provide a platform for indigenous oil and gas companies within the supply chain to expand their international activity and boost the reputation and position of the industry globally;
 - **Enhancing the contribution that the sector makes to the economy** – currently the Government is perceived to focus primarily on taxation and payments to HM Treasury, rather than considering the breadth of impact of the industry. With a focus on TVA it will ensure that the contribution the sector makes through direct, indirect and induced employment; through improved skills provision and through the economic impact of the supply chain will be reflected in the policy approach;
 - **Improving Energy Security, Affordability and Decarbonisation** – as domestic production gradually declines the UK has moved from an energy independent nation to one which relies on global imports to meet energy demand. Careful stewardship of the oil and gas industry with a focus on TVA will ensure that the contribution from domestic production to energy security and the energy trilemma is maximised while supporting the transition to a low carbon economy; and
 - **Improving R&D, technological development and innovation** – The cost of innovation and R&D is high and government support could drive innovation and help bring products to market more cost effectively. These products would not only improve UKCS prospectivity, but through the development of transferable technology these products could be exported globally. This would allow the development of domestic centres of excellence in strategically important areas. Total value from this innovation needs to be measured more robustly and regularly monitored, in order to better inform government decision making.

A Road Map to TVA

5. In order to achieve the goals of MER and TVA, a Road Map must be produced by Government, clearly setting out the policies and the manner in which the sector will be governed and managed.
6. The Road Map set by Government must ensure that any changes to the fiscal, regulatory or licensing regimes are wholly cognisant of the overall impact on value to the economy, not only short-term considerations of direct tax receipts from oil and gas production.

7. The Road Map should encompass a strategy for the delivery of MER, including the development of the skills, capability, innovation and technology required to achieve an overall increase in the capability and competitiveness of the indigenous supply chain.
8. As a basis for a new model of proactive stewardship the road map must seek to eliminate or mitigate the current investment challenges and look at actions, structures and changes that are needed to facilitate the following;
 - **Inputs:** Clear phasing of actions to achieve short-term value as well as long-term results, and a more sustainable future;
 - **Outputs:** Sustained investment across all development opportunities in the UKCS;
 - **Outcome:** MER plus maximum TVA: optimal production of oil and gas with optimal value generated for the economy; and
 - **Impact:** Sustainable industry generating significant value post-production in UKCS.
9. In doing so the Road Map must make clear the Government's strategy and approach in how it intends to use the levers available to it, namely:
 - Stewardship;
 - The Fiscal Regime;
 - Regulation; and
 - Licensing.
10. The recommendations within this report have been structured around these key levers of government, with a view to achieving MER and maximising the TVA from the industry – with a particular focus being placed on **Technology and Innovation, Skills and Decommissioning** as the key areas which must be developed and managed effectively to enable delivery of this overall strategy.
11. The innovative capability of the supply chain is crucial to delivering both MER and TVA. Government has a key role as both a driver and catalyst to ensure the Centres of Excellence that underpin the technology and skills development in the supply chain form the compelling reason for those companies to remain anchored in the UK over the long term. The development of existing, or the creation of new, Centres of Excellence must include the emerging opportunity in Decommissioning.
12. The Road Map must focus on the key levers outlined above and on defining the roles and responsibilities of Government, the new Regulator and all parts of the industry, to produce a transparent and responsive framework. This will provide a mechanism to ensure that Government is better equipped to adapt to the changing commercial environment in the UKCS and it will provide greater certainty for the industry as to Government's priorities and values.
13. If this is developed with input from industry, it will have the required credibility and sustainability to have a real impact on the legacy of the UKCS.

Understanding TVA

14. The Commission has found it difficult to source adequate data reliably to evaluate TVA in all its aspects. Government and industry should work together to develop the data that would allow a new understanding of TVA. This will in turn inform how the historical focus on Production Profits tax revenue can be re-balanced and better managed to ensure maximum TVA is achieved.
15. Recent assessments have indicated that the value generated by the supply chain is significantly greater than previously estimated. EY published two reports, jointly commissioned by OGUK, UK and Scottish Governments, showing direct UK supply chain turnover in 2012 to be in the region of £35 billion, representing year on year growth over the last 5 years.²⁶ The EY analysis also found

²⁶ UK Upstream Supply Chain: Market Intelligence and Economic Contribution Reports, published 23 April 2014.

that 42% of this turnover was from exports, a percentage which has remained steady over the last five years²⁷.

16. The Scottish Enterprise survey on international activity shows that the total international sales from Scotland's oil and gas supply chain and overseas subsidiaries grew to £10 billion in 2012-13.²⁸
17. In Scotland, international activity now accounts for over half of total oil and gas supply chain sales, demonstrating that the industry is just as strong internationally as it is domestically, and that it continues to contribute substantial additional value to the economy as a result.
18. However, it is recognised that even these detailed studies represent an understatement of this valuable economic contribution. In applying qualifying criteria and assumptions these figures represent an unknown but significant discount on aspects of the value generated by the industry as a whole.
19. A deep understanding of how this vibrant and vital oil and gas sector operates is needed in order to build and maintain its ability to generate maximum TVA. Understanding the value chain from exploration to decommissioning, and the significant role that human and financial capability plays in driving its success, is a vital pre-cursor to understanding how and why MER must be delivered.

A 5 year Strategy

20. The Road Map must set the high level agenda for good stewardship of the UKCS, expedited through the adoption of a rolling 5 year strategy, and staged in line with a comprehensive evaluation of the remaining asset value of the UKCS.
21. In 2012 the Scottish Government launched its Oil and Gas Industrial Strategy, and in 2013, the UK launched its own. These strategies have contributed substantially in the last two years to the development of the supply chain, domestically and internationally and have sought to address issues the industry are facing around skills and technology.
22. What is now needed is a much more coherent, joint approach, recognising the interdependencies that exist in the sector, with the supply chain split almost equally between Scotland and England²⁹. A coherent strategy, focussed and targeted in a way which recognises the differing environments of the five areas of the UKCS: Southern North Sea (SNS), Central North Sea (CNS), Northern North Sea (NNS), West of Shetland (WofS), and Irish Sea (IS) – and which distinguishes between the near and long-term prospects.
23. The Road Map must determine the areas for action which can achieve short-term gain and those which will provide longer term sustainability through investment and planning. The following areas for action must be prioritised:
 - **Exploration and Production:** the first priority must be to generate increased investment in order to increase exploration activity, which will in turn boost production;
 - **Infrastructure:** Access to and investment in infrastructure needs to be tackled concurrently with increased investment in production, to sustain and support continuing activity;

²⁷ UK Upstream Supply Chain: Market Intelligence and Economic Contribution Reports, EY, 23 April 2014 (the EY Report).

²⁸ *Survey of International Activity in the Oil and Gas Sector 2012/13*, Scottish Enterprise, 5 May 2014: <http://www.scottish-enterprise.com/knowledge-hub/articles/insight/scottish-oil-and-gas-exports-reach-10-billion?intcmp=hp08-2014wk20>

²⁹ According to the location of registered offices of those companies included within the analysis of the EY Report.

- **The Supply Chain:** the supply chain capability and performance in innovation and technology development must be placed on a different footing, allowing it to adequately respond to the needs of the exploration and production market; and
- **Decommissioning:** the decommissioning market represents a huge economic opportunity for the supply chain and it is an area in which the UK taxpayer has significant equity. This leaves an unarguable need to develop both efficient and effective capability and the ability to reduce costs for the operators and the taxpayer.

24. The 5 year strategy must be framed within the context of:

- MER and TVA by creating a vibrant oil and gas sector that creates sustainable wealth, based on an increasingly diverse investor base;
- The intrinsic differences in the commerciality and value drivers of the various stages of the Exploration and Production value chain through exploration, development and production and how these apply to the economic sectors of the UKCS;
- The commercial considerations made by the international oil and gas sector in evaluating investments within the UKCS versus other global opportunities, and the impact of designing fiscal and regulatory regimes that encourage domestic and inward investment; and
- The need for investment in the technology and skills required in the UK both within oil and gas companies and the broader supply chain.

25. In pursuit of this strategy a voluntary collaborative partnership environment must be established. Investors must be incentivised to work collaboratively to achieve common objectives and Government will retain the ability to exercise legal powers through fiscal, regulatory or licensing levers if obligations are not met as agreed and in the interests of MER and TVA.

26. Government and the new Regulator must therefore develop a means for establishing working partnerships with investors with common objectives that deliver full economic benefit to the nation and a realistic expectation of a reasonable return for operators. The regime must be managed in a sustainable way, ensuring the stable, predictable regime required for investment even in marginal resources that will deliver additional value.

Recommendation 1: A Road Map must be established quickly for the future of the UKCS ensuring the implementation of a clear strategy to maximise TVA generation for the nation.

Tackling the impediments to investment

27. Government must be proactive in attracting higher levels of appropriate long-term investment into the UKCS, to ensure that the level of production and recovery of hydrocarbons delivers maximum TVA to the economy.

28. This investment is required in all areas of the industry; exploration, development, production, infrastructure, decommissioning and the supply chain - enabling the development of sustainable capability, skills, innovation, and technology development.

29. The assessment of what is 'economic' recovery must be reviewed in light of potential TVA. Proactive stewardship by the new Regulator must not only tackle the impediments to investment but also assist Government in ensuring the maximisation of TVA through providing advice in relation to the necessary investment in, and development of, skills, technology and innovation.

30. The Road Map must seek to create a new, more positive sentiment, that the UKCS is:

'Seeking investment and open for business'

31. This sentiment should be enacted with a clear focus on recognising the contribution of those who are prepared to work in partnership with Government and the new Regulator, bringing benefits to the nation from this natural resource.
32. Whilst it is still possible to point to levels of activity and investment that are encouraging, less positive indicators in areas such as exploration and production efficiency must be reversed if the basin is to achieve its potential. The sentiment towards future, sustained investment in the UKCS is not as positive as might be expected from the record levels of investment being reported.
33. The current regulatory and fiscal regimes were relevant for the period when the UKCS had large, projects that attracted investment funds in the globally competitive market. The investment environment in the UKCS is undergoing transformative change and the nature of the regulatory and fiscal regime going forward must do more to attract smaller and specialised companies to invest in the UKCS.
34. A new regime must be established. A tax and regulatory regime which does not inhibit investment and positively drives the attainment of the maximum economic potential from the UKCS. This has the potential to create a new positive sentiment, with Government and the new Regulator sending the right signals to investors and declaring a clear purpose and intent which has resonance internationally. This message must make clear an intent for a **predictable, investable, clear and competitive regime**.
35. The new Regulator, in support of MER, should be responsible for creating the appropriate investment environment and for the economic production of oil and gas, with the industry and Government working together to make the most of that opportunity.

Recommendation 2: Government and the new Regulator must be proactive in tackling the impediments to sustained investment, creating the positive sentiment for attracting investment and facilitating its enactment, implementation and embodiment.

The Supply Chain

36. In support of the Government's dual policy approach there is a need to foster a strong competitive supply chain which is capable and sustainable.
37. Much of the focus up until now has been on taxation from production and that has been a key driver in setting the relationship between oil and gas operators and the Government. The reality now is that the prospect of generating maximum TVA requires a change of focus and the assessment of value has to include all areas where value is generated.
38. It is estimated that around 450,000 jobs are supported by the UKCS through direct and indirect employment. For every job in an oil and gas company a further three jobs are created in service companies or ancillary sectors. The importance of incentivising investment in oil and gas in the UKCS therefore goes beyond the oil and gas companies, to every facet of the wider supply chain.
39. Expertise developed during the early stages of the UKCS is now being applied to new frontiers across the world. Rising to new global challenges will allow our indigenous oil and gas businesses to be world leaders in key parts of the global supply chain.
40. There needs to be a real focus on developing, establishing and anchoring in the UK the supply chain that will deliver the technologies, capabilities and skills needed to meet these technical challenges. Such a supply chain has the potential to thrive long after production has ceased.
41. This will only be achieved if, along with this commitment to Maximise Economic Recovery, there is well managed on-going investment in creating centres of excellence in key areas of technology

and know-how around which a technically superior core of companies is able to compete and thrive supporting the oil and gas industry worldwide.

42. This indigenous supply chain should be fostered and championed irrespective of ownership. Sustainable value can be achieved through developing domestically owned capabilities and strengths, as well as securing the UKCS as a preferred location for the international industry to operate due to the Centres of Excellence delivering the skills, technology development and innovation.

Recommendation 3: Government should play a proactive role in developing the capability and competitiveness of the supply chain with advice and support from the Regulator.

Box 4: Value Creation in Norway

For evidence that a strategic, long-term approach to stewardship in the UKCS, focussed on the generation of value, is needed it is helpful to look to Norway.

The Norwegian Oil and Gas industry is internationally competitive in almost all parts of the oil and gas value chain – Norway has become a global hub for oil and gas activity, with a particular focus on pioneering technology. The over-arching goal of the Norwegian authorities has been **value creation** for the nation. Value creation has been maximised through the adoption of a dual policy of attracting global oil and gas companies, and stimulating the development of competence and capital.³⁰

A key feature of the Norwegian regime has been the influential role which the two National Oil Companies, Statoil and Petoro AS, play in the sector, and the value created for the nation through the state ownership of these companies.

Since production started on the Norwegian continental shelf in the early 1970s, the industry has contributed approximately NOK 11,000 billion to the Norwegian GDP, measured in 2013 NOK.³¹ This has helped to create economic security and jobs across Norway.

Value creation per employee is estimated to range from NOK 1.2 million for suppliers to NOK 6.5 million for operators. In comparison, value creation per employee in the Tourism industry in Norway is NOK 0.4 million³².

Minister for Petroleum and Energy in Norway, Tord Lien, sums this up in the latest Norwegian Ministry 'Facts 2014' publication:

*"The objective of Norwegian petroleum policy is to generate the greatest possible value from the resources on the Norwegian shelf in the best interest of the Norwegian society. This will require the best efforts of everyone involved. Within a clear regulatory framework, we will work together in a smarter, more efficient and well organised manner. We must develop knowledge, innovation and new technology. Then, and only then, will we be equipped for the future."*³³

As a maturing province Norwegian policy makers are now faced with similar challenges as exist in the UKCS. In this context public policy must continue to focus on ensuring the industry makes a sustainable contribution to value creation in Norway.

³⁰ <http://naturalresourcecharter.org/sites/default/files/A%20knowledge%20based%20oil%20and%20gas%20industry.pdf>

³¹ http://www.regjeringen.no/upload/OED/pdf%20filer/Faktaheftet/Fakta2014OG/Facts_2014_nett.pdf

³² See reference 30.

³³ Ibid

4. THE FISCAL REGIME

Key messages:

- **Fiscal policy making has been influenced by the short-term impact on production tax revenues, causing substantial uncertainty with negative effects on investment.**
- **Stability and predictability must be central to the fiscal regime in the UKCS.**
- **The optimal fiscal regime should reflect the current and future context of the basin. There is a need to re-assess the combination of tax rates and allowances which will fulfil these requirements.**
- **The tax system needs to strike an appropriate balance between incentivising development, maximising returns to the nation and ensuring that an appropriate share of economic rents are collected by the Government. These objectives are not mutually exclusive. A tax system which maximises returns to the nation is entirely compatible with ensuring an appropriate stake for Government.**
- **Allowances should be predictable at the stage of evaluation and based on economic rather than physical factors.**

Purpose

1. The widely-accepted purpose of the UKCS taxation system is to collect a fair share of the economic rents from oil and gas exploitation to the state on behalf of the nation. The effective operation of this concept should also result in a fiscal regime which provides incentives to:
 - explore and appraise discoveries;
 - develop new fields and incremental/EOR projects'; and
 - produce oil and gas until such a time as it becomes uneconomic, before tax, to do so.
2. The oil and gas sector exhibits characteristics that require special consideration in terms of economic policy and taxation. These characteristics include:
 - revenue streams which are inherently uncertain and are secured over the long-term;
 - significant up-front and decommissioning costs; and
 - a range of technical and financial risks.

The efficient collection of economic rents in practice has to reflect these complexities.

3. Translating this into a practical tax system has proved to be a fraught subject over many years, resulting in the current system in the UKCS which, as detailed in Chapter 2, is now very complex in its operation and has been subject to frequent changes. This is largely due to the ad-hoc nature of its development in response to specific short-term issues.

The case for change

4. The changing underlying features of the investment environment, need to be considered in determining the design of an efficient tax system which is sustainable for the future. The regime requires to be adapted to reflect the changing features of the investment environment domestically and to ensure the UKCS remains internationally competitive as a basin to investors appraising opportunities globally.

5. An efficient system should not inhibit investments which are economic before tax, neither should it subsidise projects which are uneconomic before tax. As highlighted in the Wood Review, an efficient fiscal system should also have flexibility to adapt and encourage investments across the diverse range of UKCS opportunities, including; frontier areas, new plays, technically challenging areas and mature oil and gas.
6. The regime should aim to be non-distortionary, sustainable over the longer term, and it should operate with minimum compliance costs on companies – either through its complexity or reporting requirements. The Commission recommends that these objectives must be central to the UKCS policy approach and fiscal regime.
7. It is very clear to the Commission that stability and predictability must be central to the fiscal regime in the UKCS. In a maturing environment, where prospectivity is lower and accumulations are likely to be smaller, it is increasingly important to manage the balance between risk and reward for the industry and for Government.
8. Oil and Gas companies prefer to invest in stable, predictable regimes, especially in large opportunities. Where the UKCS cannot promise the large opportunities it once could, it must be able to offer a stable and predictable regime – and one which recognises its place in the global market.
9. Government should recognise that oil and gas investment decisions and their consequences are particularly long-term in nature. The fiscal regime should therefore reflect the appropriate time periods for the industry which typically extend well beyond Government budget periods.
10. It is recommended that Government considers how it might provide assurances to industry that a commitment to fiscal stability and predictability will be fully honoured and will reflect a full understanding of the unique investment environment of the oil and gas sector.

Recommendation 1: Government should seek to ensure international competitiveness, stability and predictability that is appropriate to the maturing environment of the UKCS and the competing investment environment globally.

TVA within the broader fiscal and policy framework

11. There must be a clear recognition of TVA within the broader fiscal framework.
12. It has been recommended that informative data sets should be developed by Government to improve decision making, this will assist with the assessment of proposed changes to the fiscal regime. The Commission advocates embedding a greater understanding and knowledge across all arms of Government of the likely impact upon TVA of any proposed changes.
13. To this end the Commission has recommended that the new Regulator should have a formal right of consultation on fiscal or regulatory issues which could have an impact on investment or production in the UKCS.
14. It is within this context that the Commission has recommended that licence terms should be investigated as a means of ensuring greater certainty for operators investing in the UKCS. For example, through incorporating a commitment to meaningful consultation with the Regulator and industry on regulatory or fiscal changes and through formally placing MER and TVA as central to those considerations³⁴.

³⁴ As discussed in more detail in Chapter 5 – Regulation: Governance and Licensing

A positive investment sentiment

15. The sentiment attached to the UKCS approach to fiscal policy has not always been positive. Over the past decade, the UK Government has made numerous substantive changes to the UKCS fiscal regime, resulting in instability which damaged investor confidence at the time.
16. The creation of this new positive sentiment from Government – which is discussed in greater detail in Chapter 5 – should be reinforced through the actions of Government. This will help to create a fiscal framework which is stable, predictable, competitive internationally and flexible in responding to market forces for long-term investment and value generation.

Recommendation 2: The fiscal regime and policy approach should serve the purpose of creating and reinforcing the positive investment sentiment; any changes to the fiscal regime should be credible for long-term, and set in light of achieving maximum TVA.

Simplification and targeted incentives

17. The UKCS fiscal regime is central to the long-term sustainability of the sector. The following section highlights a number of issues where improvements could deliver substantial benefits for producers, investors and government.

18. The specific impact of each measure has not yet been modelled, however the measures proposed are likely to have a positive impact on investment, exploration activity and production all of which are central to extending the longevity of the sector and benefit the public finances in the longer term. For example, an investment cost-based allowance for Supplementary Charge as recommended below has the potential to increase long term activity and tax revenues compared to the existing field allowances.

• New Field Developments

19. New field developments are currently subject to Corporation Tax (CT) at 30% and Supplementary Charge (SC) at 32% with allowances for costs all being available on 100% first year basis. In addition there is a plethora of field allowances against the SC based on the physical characteristics of the fields.

20. These allowances are designed to help fields which are relatively high in cost (per boe). The physical features are essentially proxies for costs. However, by their nature they do not accurately and sufficiently reflect the actual costs being incurred.

21. Costs may be relatively high for a multiplicity of reasons. If the physical criteria do not qualify then the allowance available could be too low to produce the desired incentive – to render projects which are economic before tax, commercial on a post-tax basis. The allowance could also be unnecessarily large.

22. Under the current system investors will often not know whether they will be entitled to a field allowance or not when appraising discoveries. In practice, eligibility for a field allowance has become akin to on-going negotiations between investors and the UK Government and it therefore lacks transparency and predictability.

23. In Budget 2014 a new allowance against the SC for Uhp/HT fields was proposed, based on capital expenditure. It is proposed that the allowance will represent a proportion of capital expenditure incurred, with 62.5% suggested as a minimum rate. There is considerable merit in this approach.

24. This would base the allowance on a key economic feature of the project, targeting an area which requires increased investment. Crucially, the details of the scheme would be known well in advance of any investment decision; enhancing the transparency and predictability of the tax treatment.

25. It is proposed that that this new allowance will also apply to exploration expenditure within the vicinity of a discovery. This should incentivise exploration and potentially encourage cluster developments. This allowance also brings with it the benefits of automatically accommodating cost inflation. This is an issue which is currently so prevalent in the UKCS that it has already arrested the development of some new fields.

A cost-based allowance

26. The Commission therefore recommends that the current system of new field allowances be replaced by a single allowance based on field investment costs.
27. The allowance must apply to all types of fields, not just to Ultra High Pressure / High Temperature (Uhp/HT) ones, to include tight gas fields for example, where costs are very high. There will be transitional issues with respect to the existing allowances and care would be required to ensure that the new allowance did not result in less relief than is now available for current new investments. Grandfathering arrangements can prevent this through a staged introduction of the new allowance.
28. As with the current Brownfield Allowance (BFA) a cap on the size of this cost based allowance would be needed to prevent outright subsidies and a lack of cost consciousness. The allowance could simply be based on investment costs (as has been proposed for the new Uhp/HT allowance) or it could be based on investment per boe of resources. The respective merits of these two approaches should be tested.
29. This proposal would substantially increase the transparency of the fiscal regime for investors and therefore contribute towards a more predictable regime, which is flexible enough to adapt to a changing commercial environment.

Supplementary Charge

30. The detailed redesign of the system of field allowances, away from the current plethora based on physical characteristics to one based on costs, should be seen in the context of the rate of SC as well. Allowances against corporate tax and/or SC rate reductions would each act to incentivise investment.
31. A lower tax rate would involve a reduced rate of relief for expenditures as well as a lower rate payable on income. The Commission recognises that a lower rate of SC can involve a 'deadweight loss' of tax revenues. This should be seen against the extra exploration, field development, production efficiency and EOR activities generated by the rate change. Any rate reduction could be accompanied by a reduction in the size of the field allowances.
32. In current circumstances the Commission recommends that the comparative merits of a rate reduction along with downward adjustments to the system of field allowances be considered afresh. This would allow Government to reassess the appropriate balance between headline rates and the nature and size of the field allowances and the aggregate effect on the nation's public finances.
33. While policies to enhance production efficiency are primarily a matter for regulation a reduced tax rate could provide further incentives to operators to invest by increasing the return from the necessary expenditures.

• **Oil/Gas Treatment**

34. There is a need for larger allowances for predominantly gas fields to compensate for lower expected revenues.
35. Gas prices have been in the range of 50%-60% of oil prices in recent years. However, the cost per boe of developing a gas field is similar to the cost of developing an oil field. An allowance for gas fields should still be based on investment costs as opposed to the physical characteristics of a field. This could equitably deal with the fact that gas fields in the SNS cost less to develop than gas fields in the CNS, NNS and WofS. In the latter regions the value of the allowance could be greater in order to reflect this reality – consideration would be required as to how this would interact with proposals to move to a streamlined cost based allowance system.

- **Incremental Investments/EOR**

Operating costs

36. Consideration should be given to the Brown Field Allowance (BFA) applying to operating costs as well as investment costs for incremental investments.
37. The current BFA provides an allowance against the SC based on investment costs per boe of incremental oil/gas resources, with a ceiling. This means that only incremental capital costs, excluding decommissioning spend and sunk costs, are included in the calculation of what costs are eligible.
38. The allowance is larger for PRT-paying fields to compensate for the extra tax payable in relation to those. However, some EOR projects have large operating costs. An example is polymer flood where the purchase of expensive polymers can continue for several years. CO₂ EOR schemes may also involve substantial additional operating costs, depending, for example, on the transfer price of CO₂.
39. The estimation of operating costs for this purpose would involve definitional and practical hurdles in its implementation. However, the ability to utilise independent verification should help to overcome these difficulties.
40. If the proposed cost-based field allowance were introduced more widely it is possible that it could be adapted to replace the Brownfield Allowance as well. The issue of large operating costs in some EOR projects would then need attention. It is recommended that consideration be given to the possible application of the cost-based field allowance to incremental/EOR projects. This could be simpler but as efficient as the present Brownfield Allowance.

PRT

41. Currently the headline rate of tax in PRT-paying fields is 81%. In order to achieve maximum economic recovery from these mature fields it is important that investments in incremental projects or asset transfer to companies specialising in the extensions of the lives of these fields are not discouraged. In some cases, a tax rate of 81% may inhibit these activities
42. It is also necessary to incentivise EOR projects, such as CO₂ EOR, which require substantial investment. There is an inconsistency in the tax treatment of incremental/EOR projects in PRT-paying fields compared to non PRT-paying fields which deserves remedial attention. Currently the difference in tax is substantial.
43. There is therefore a case for a reduction in the PRT rate from its current 50% level to encourage investors to examine Improved Oil Recovery (IOR) /EOR schemes while still providing relief to the operator for decommissioning of the relevant infrastructure further down the line. This would reduce the reliance on the BFA for such investments.
44. A reduction in the PRT headline rate would also increase the return to expenditures on enhancing production efficiency. Increased investment in the development of mature fields, production efficiency and EOR (alongside a reduced reliance on BFA for PRT fields) would minimise the deadweight loss and maximise the return from PRT fields. The potential for increased production levels and delayed abandonment will generate benefits for the industry and for the nation.

- **Exploration**

45. The current Ring Fence Expenditure Supplement (RFES) allowance for exploration offshore should be able to be carried forward for a greater number of accounting periods.
46. For investors in a taxpaying position relief at 62% is currently available for exploration expenditure, with all allowances set at 100% of capital costs on a first-year basis. The recent increase in the Small Field Allowance has improved the expected full cycle return for companies that are in a taxpaying position and undertake successful exploration activity.
47. However, for investors not in a tax-paying position exploration, appraisal and development losses can currently be carried forward at 10% interest for 6 accounting periods. This is typically not a very long period in light of the long term nature of oil and gas investments and projects. The main development expenditure can often (at least in part) be undertaken after this 6-year period has expired.
48. For onshore activities a 10-year accounting period is now permitted, and, after 3 years the allowance can be utilised elsewhere. It is arguable that there should be no limitation to the carry forward period for offshore exploration to reflect the uncertainties and realities of the investment environment. However, an extension to at least 10 accounting periods would be very beneficial.
49. In light of the changing nature of investors in the UKCS, it is more and more common for exploration to be carried out by smaller, independent operators who are less likely to be in a tax paying position. This measure would therefore be likely to have a positive impact on investment and exploration activity through increasing the expected full cycle return for smaller or newer companies who are not in a tax-paying position – a return which is currently considerably less than that for full current tax paying investors.
50. Changing the basis of the new field allowance to one based on investment costs should also go some way to enhancing the investment clarity for explorers. However, consideration should also be given to extending the eligibility of the proposed capital investment allowance to include exploration more widely than only in the vicinity of a single discovery.

- **Transfers of licence interests**

51. It is widely recognised that the tax system should not inhibit the transfer of licences to companies that want to take forward further development and generate additional value. Significant progress has been made in ameliorating capital gains tax on licence transfers, particularly where the seller continues to invest in the UKCS.
52. In 2009, reinvestment relief was introduced for trading companies making disposals of licences, giving an exemption for the capital gain arising on the disposal, provided the proceeds received are reinvested in specific UKCS activities. The scope of qualifying reinvestment activities was widened in 2010, and Budget 2014 announced that the relief will also become available to pre-trading companies when Finance Act 2014 is passed.
53. Together with the substantial shareholdings exemption, which is capable of exempting gains arising on the disposal of corporate entities providing certain conditions are met, the capital gains tax regime from 2014 is expected to offer appropriate reliefs that prevent artificial inhibition of licence transfers.
54. Budget 2014 introduced changes intended to limit the ability of a company to utilise certain tax reliefs after a change in its ownership (known as “loss-buying targeted anti-avoidance rules”, or “loss-buying TAARs”).
55. These changes had a disproportionate impact on oil and gas companies which were still in the ‘pre-trading, exploration and appraisal’ stage, by limiting their ability to set exploration and

appraisal expenditure against profits accruing after any change in ownership. Again this has a disproportionate impact on smaller, independent companies which are increasing in number in the UKCS market.

56. It was anticipated that the loss-buying TAARs could inhibit exploration and appraisal activity, by denying the investor any opportunity to realise tax relief for unsuccessful exploration. Budget 2014 announced that exploration and appraisal expenditure would in future be excluded from the impact of the TAARs.
57. It is important that this announced change becomes law, in order to remove any unintended barrier to exploration activity.

- **Third Party Access to Infrastructure**

58. Government should consider the impact that the Supplementary Charge on third party tariff income is having on third party access to infrastructure. .
59. Inefficient third party access to infrastructure has been a problem in the UKCS for many years. Such access is widely regarded as being essential to produce Maximum Economic Recovery. The UK Government has acquired powers to be more interventionist in setting terms and conditions, including tariff determination, but it is widely perceived that DECC has not used these powers very proactively.
60. The new Regulator should become much more proactive in this area and effective regulation is certainly the most important element in the solution to this problem. Taxation arrangements can only play a secondary role. However, it is arguable that, if tariffs are to reflect the costs of the third-party tariffing activity then, to encourage this, the applicable tax rate should not incorporate a surcharge above corporation tax (Supplementary Charge).
61. There is therefore a case for abolishing SC on third-party tariffing activity on the same grounds as PRT was abolished on new tariffing contracts in 2003. This could encourage asset owners to be more willing to provide the service as advocated in the Wood Review, and in turn to reduce the tariffs being charged to the third party.
62. The removal of SC from third party tariff incomes also requires consideration to be given to the relevant deductible costs. In principle, only the incremental costs from the tariffing activity should be disallowed for the purposes of calculating what is due under the SC. Effective regulation should ensure that the benefits of the tax reduction are passed on in lower tariffs.
63. In this context it is relevant to note that the provision of third party infrastructure services provided by licensees in the UKCS are currently subject to CT at 30%, while similar services provided by non-licensees would be taxed at 22% in 2014-15 and 20% from 2015-16 (albeit capital allowances for non-licensees are not as generous).
64. The difference in treatment has grown substantially in recent years, as ring fenced CT rates have remained at 30% while onshore CT rates have fallen considerably.

Recommendation 3: The simplification of the UKCS fiscal regime should be a key objective for Government. A number of specific and targeted improvements to the fiscal regime (outlined in this chapter) are recommended.

Implementation

65. Chapter 2 demonstrated that there is a need to align the taxation system to the current and emerging environment. The high-level key recommendations outlined above are aimed at ensuring an appropriate broader fiscal framework in the long-term, consistent with the aims of MER and TVA.
66. The implementation of the specific, targeted, recommendations outlined in this Chapter would represent a move towards a regime which minimises distortions whilst ensuring that projects which are economic before tax remain commercially acceptable after tax.
67. These recommendations also seek to ensure that licensees contemplating long term investments can be confident that their tax liabilities will be relatively predictable. Central to this is a fiscal regime which incorporates appropriate flexibility to respond to a range of external factors, particularly oil and gas price fluctuations, non-uniform UKCS development opportunities, and cost changes.
68. Prior to implementing any of these measures it will be important for detailed analysis to be carried out to assess the impact each measure would be likely to have on investment in exploration, field development, production efficiency, EOR and tax revenue. As part of this Government should ensure that the design and implementation of these measures is consistent with the principles of MER and TVA.
69. Central to this assessment Government should consider the impact of each policy measure, including any potential deadweight losses, on the public finances. This will determine the most appropriate approach for implementing specific recommendations set out in this chapter (i.e. a selected implementation, phased implementation or as part of a more fundamental reform to the tax regime).

Constitutional Change

70. In the event of a Yes vote, both Governments should adopt a collaborative approach with regards to the operation of the fiscal regime, with a view to maximising synergies, minimising costs and with a clear focus on providing clarity and certainty to the industry. This approach would be in the interests of both governments, industry and taxpayers.
 71. Putting stability and predictability as central to the fiscal regime, the Commission has recommended that in the event of Yes vote in September's independence referendum, while basic policies may well differ between Scotland and the rest of the UK, as far as possible policy implementation should be coordinated.
 72. Any changes to the regime, even when they are considered to be in the positive, should be properly consulted upon, and should be confirmed and implemented within a well-publicised timescale to enable the oil and gas industry to take full account of any such changes within their future business plans.
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5. REGULATION: GOVERNANCE AND LICENSING

Key Messages:

- **The emphasis of future regulation should be on high quality, proactive stewardship – the new Regulator must utilise a combination of regulatory powers, persuasion and incentives.**
- **There is a need for a change to the way in which oil and gas companies operate within the basin. At a corporate level there should be a shift to a new paradigm of complementarity and mutual advantage.**
- **If voluntary and incentivised stewardship does not deliver, further licensing obligations and statutory powers for the Regulator should be considered in support of achieving maximum TVA.**

Existing Regulation

1. The Commission agrees with the Wood Review that the current model of regulation in the UKCS is considerably under-resourced. As a consequence, it is our view that the regulatory framework has not been pro-active or as influential as it could have been.
2. The current Regulator is also considered to have had a limited role in shaping fiscal policy. As such, the current Regulator is viewed as detached from critical decisions which shape tax rules, or the development of new allowances or other fiscal mechanisms – all of which could enhance the longevity of the UKCS, boost investor confidence, and provide sustainable value to the economy.
3. It is the Commission's view that the regulatory regime must recognise the increasing diversity of operators and the move to smaller, more marginal fields with greater emphasis on collaborative industry approaches. This highlights the need to reduce bureaucracy and remove obstacles to collaborative development.
4. Wood stated that the "*fundamental licensing model by which the UK monetises its offshore oil and gas resources is the right one*" and that it is the regulatory body which is "*struggling to perform a more demanding stewardship role*" in an operating environment which has changed significantly in the last two decades.
5. Industry recognises the need for partnership working but it does not often behave in ways conducive to achieving this outcome. This has been exacerbated by post Macondo litigation.
6. Wood suggests that the current "light touch" regulatory regime is not sufficient in managing the future of the UKCS. Instead, there is a requirement for licence holders to commit to MER principles, working on agreed Cluster Field Development Plans and committing to shared infrastructure, with regulatory power to encourage collaboration.
7. The Commission fully supports the Wood Review assessment of the governance model applying in the UKCS, and the solution: the creation of a new arm's length Regulator for the UKCS with increased powers to enable effective high quality, proactive stewardship for the delivery of the MER strategy.

The New Regulator

8. There is broad industry agreement that the current framework is under-resourced and a stronger, more proactive regulator, would be welcomed. The Norwegian model of a regulator has been cited as a more effective model of stewardship – with the data and expertise to engage with industry, and the strength and expertise to encourage operators to collaborate for the good of the industry as a whole.
9. It is the commission's view that the new Regulator's role must utilise a combination of coercive regulatory powers, persuasion and incentivisation. Government must set the parameters for the implementation of this strategy in the context of TVA; taking responsibility for its achievement.
10. The assessment of what is 'economic' recovery must be reviewed in light of potential TVA. Proactive stewardship by the new Regulator must not only tackle the impediments to investment but also assist Government in ensuring the maximisation of TVA through providing advice in relation to the necessary investment in, and development of, skills, technology and innovation.
11. As a result of this new regulatory model, responsibility for licensing is likely to be further devolved from central government. It is important to recognise the challenges in ensuring the appropriate level of capacity which facilitates prudent stewardship of UKCS licences. The distinction of the levels of responsibility between Government and the new Regulator must be explicit, and distinct efforts will be required to ensure any duplication of effort is minimised.

Recommendation 1: The over-arching strategy of MER must be implemented by the new Regulator, inclusive of the whole industry, and viewed in light of the ultimate goal of achieving maximum TVA.

Box 5: The new Regulator

- The Commission recognises the influential role which Statoil and Petoro AS play in the Norwegian oil sector, and acknowledges the prevalence of National Oil Companies in many other oil and gas provinces. In considering future policies for the UKCS the Commission has adopted a non-ideological view in suggesting that the role of a strong regulator could replicate some of the key responsibilities often entrusted to National Oil Companies and bestow some of the benefits.
- National Oil Companies tend to be designed to act as commercial companies but will also perform regulatory functions on behalf of the Government.
- Significant direct equity investment in the UKCS by a new National Oil Company (NOC) would inevitably be expensive, and in the current and prospective budgetary position of the Governments of the UK/Scotland, this would be difficult to justify. However, in relation to the Commission's proposals, National Oil Companies internationally adopt valuable roles other than equity participation.
- They tend to play a leadership role with respect to the province exploration strategy, R&D and technological innovation more widely. In some cases they also advise Government on technical and commercial factors impacting upon basin performance.
- The Commission does not propose the establishment of a National Oil Company in the UKCS. However, it believes that the new Regulator, equipped with the enhanced powers advocated within this report and within the Wood Review, can effectively undertake many of these functions and generate the associated benefits for the industry and for society. This must be accompanied by cost efficiency, minimal bureaucracy and with the full cooperation of the industry.

Cultural Change

12. There is a need for a change in the way oil and gas companies operate within the basin. While it is critical that the benefits which come from competition are retained and encouraged, it is also important that a new paradigm of complementarity and mutual advantage is fostered.
13. In terms of legal complexity, the Wood Review cites the UK as being "*one of the most difficult and adversarial legal and commercial basins in the world*", characterised by "*risk aversion to the detriment of value creation*" and industry is called on to lead a change in culture through greater adoption of standardised agreements, processes and procedures. The European Offshore Safety Directive calls for clarity around liability and compensation, and may therefore assist in the development of such standard approaches.
14. The UKCS presents a complex scenario for entrants in terms of the Regulatory and Licensing regime, a factor which raises the cost of entry and impedes investment. If the licensing regime is to operate swiftly, seamlessly and without delay in a complex world without 'overzealous legal' constraints, then a strong, well-resourced and informed regulatory regime is required.
15. With the changing competitive landscape in the UKCS, characterised by the entry and increasing influence of a mix of large subsidiaries, new small to medium sized players and emerging NOCs, an ever greater variety of corporate strategic objectives are becoming manifest. These companies will be key to the future of the UKCS and informed stewardship must acknowledge the differing motivators behind investment decisions.
16. The starting point for alignment begins with the establishment of coherent operating hubs within the five regions of the UKCS – SNS, CNS, NNS, WoS and IS. Only then will behaviours shift from

driving unique competitive advantage in which only a few players benefit, to an environment that promotes cooperation and mutual advantage.

17. This shift is fundamental to accessing the potential remaining 24 Bboe and includes challenging a number of current operating practices which include:
 - The current mechanisms for managing ongoing base operations (production operations, maintenance and inspections for facilities and pipelines) and their related supply chains with a change in focus to sharing and creating economies of scale across operating centres;
 - The need for pooling of well management and drilling resources to ensure sufficient market capacity to meet the needs of small to medium scale operators whilst recognising the increased obligations and liability exposure arising from the 2010 Macondo incident;
 - The balance in the type of fixed (platforms) and mobile Floating Production, Storage and Offloading (FPSO) infrastructure pathways to the market;
 - The ownership and management of arterial pipeline systems and the tariffs charged;
 - The introduction of technologies from reservoir to export that extend access to resources and the life cycle of facilities as well as innovative design technologies; and
 - The need for the relationship between operators and contractors to change from one which has been historically adversarial to one where the supply chain is positively encouraged to come forward with innovation and technologies to provide solutions to the challenges currently facing the UKCS, contributing to the achievement of MER and therefore generating maximum TVA.

Attracting Investment: Licence Measures

18. The current process for obtaining licences is regular and frequent rounds, rather than ad hoc awards. This approach, with the related publicity, concentrates the attention of explorers and produces the maximum response.
19. Currently a block is awarded for a four-year period after which 50% is relinquished. The remaining 50% can be kept for another four-year period after which it is relinquished unless a field development is in prospect – which permits the development area to be kept for an 18-year period.
20. These arrangements produce an appropriate balance between the realities of undertaking the work and the national need to encourage expeditious exploration. For frontier areas the relinquishment terms reflect the difficult operating environment such as in WofS, where six year exploration, and six and nine year development terms are offered.
21. Within this context there are a number of specific issues which licensing policy set by Government, and licence monitoring and implementation by the new Regulator, should seek to address:

- **Access to Data**

22. Expeditious exploration involves the ready acquisition of seismic and well data. Much data already exists, but it is not always made available to new explorers.
23. The acquisition of new data can be very expensive and the Wood Review has suggested that licensees should collaborate to share these costs, particularly in relation to frontier and relatively new play areas. The Commission supports this and suggests that the new Regulator seeks to facilitate collaboration on this basis as part of its responsibilities.
24. The Commission also believes there may be merit in a state contribution being made to seismic studies in new play areas – where there would be a wider national benefit from enhanced knowledge of the exploration potential. The new Regulator should investigate further the national costs and benefits of doing so, and it should take steps to ensure that the existing licensees fulfil

their obligations to ensure that other explorers can obtain ready access to data in accordance with licence terms.

- **Stewardship**

25. Given the clear need to increase exploration activity the new Regulator should give fresh consideration to the optimal balance between the exclusive rights of an existing licensee and the national benefit from wider and readier access.

26. In terms of Maximising Economic Recovery the new Regulator should have powers to set expectations in terms of recovery by licence holders and to impose sanctions where these expectations are not met.

- **Cluster developments/Collaboration**

27. The Wood Review recommended that the Regulator be given the power to call companies to account when they adopt an 'unreasonable' position in relation to industry collaboration. It cites the good example of industry collaboration on Health and Safety as a model for other forms of collaborative working. However, it should be recognised that industry itself has identified that collaboration, without an imperative such as low prices, can be difficult to achieve.

28. With smaller companies playing an ever more central role in maximising UKCS potential this further drives the need for a collaborative environment to ensure all parties can play their part in the basin's future.

29. Currently DECC assesses and approves all field development plans. This includes significant incremental projects, which have acquired increased importance in recent years. The Wood Review suggests that the Regulator's role should be enhanced to include the development plan for a field, and to consider the benefit of a cluster of developments, incorporating the economies of scale from sharing a common processing hub and/or pipeline, for example.

30. The Commission is supportive of this proposal. However, its success depends on much more effective collaboration than has been seen in recent years. For new licences a commitment to collaborate could be set as an obligation, but many relevant licences will be existing, and there may be legal difficulties constructing and enforcing such an obligation which would require to be overcome.

31. In its stewardship role, the new Regulator should be able to influence the development plans for a cluster of new developments as well as activity in the mature phases of field life.

32. One way of promoting communal developments is to realign equity interests to enhance the financial harmony among licensees.

- **Production Efficiency**

33. Under the present Stewardship Initiative relating to mature fields DECC is able to press operators to enhance their production efficiency with the possibility of requesting a change of operator or even selling an equity interest in the event of non-compliance.

34. The Commission supports a substantially enhanced role for the new Regulator with respect to production efficiency. This would include proactive interventions to a greater degree than has happened in the past. The potential national gains, enhancing MER and TVA, from enhanced production efficiency justify a more proactive role.

- **3rd Party Access to Infrastructure**

35. This is an issue which has needed to be addressed for a long time, with examples of protracted negotiations and even failures to reach agreement. Whilst DECC now has powers to become more proactive in determining terms and conditions it has preferred that agreements are reached by negotiation.

36. It is clear to the Commission that a more proactive involvement by the new Regulator is needed to speed up the process in some cases and to determine terms when no voluntary agreement is in sight. The realignment of equity interests among the asset owners and potential users to harmonise financial interests could again be used by the new Regulator to facilitate agreements.

- **Impact of licensing measures**

37. The evidence gathered by this Commission has reinforced industry recognition of the need for effective regulation of the UKCS in areas impacting upon licensing, operation and decommissioning. However, any regulatory change should be clearly set out and communicated swiftly in order to minimise confusion, disruption and uncertainty in planning.

38. All the proposed duties for the new Regulator constitute a significant increase in extent and depth of responsibilities from the existing situation and should be seen within the context of MER and TVA.

Recommendation 2: The licensing regime should aim to achieve ambitious targets for MER as well as the higher aspiration of maximum TVA.

Stability and Predictability

39. This report has emphasised the importance of the need for predictability and stability in both the regulatory and fiscal regimes in the UKCS.

40. The effect of frequent changes, and, in some cases, a lack of prior consultation by Treasury, has earned the UKCS a reputation for fiscal instability, damaging the competitiveness of the province and inhibiting new investment. This has damaged investor confidence in the past, and has resulted in decisions being made for short-term gain which have a negative impact in the longer term.

41. As part of a move to re-balance the relationship between the industry, the Regulator and Treasury, much closer collaboration than has been seen in the past is necessary.

42. The Commission notes the Scottish Government's commitment to formal consultation prior to future reforms to the policy framework and this is welcomed as a means to avoiding or mitigating any negative impacts on investment or production.

43. This formal consultation must be meaningful and it must be undertaken well in advance of any proposed change being announced. Consultation with industry should be carried out as part of this process with the new Regulator acting as the facilitator.

44. Decision making must also be firmly based upon the principles of MER and TVA, enabling an assessment of the degree to which a measure is likely to impact upon economic recovery of oil and gas in the UKCS and the extent to which factors considered to be impeding or encouraging exploration, investment and production, for example, also have an impact on the wider economy.

Recommendation 3: The new Regulator should have a formal right of consultation on fiscal or regulatory issues which could have an impact on investment or production in the UKCS.

Recommendation 4: Licence terms could be worth investigating as a means of ensuring greater certainty for operators investing in the UKCS, through incorporating a commitment to meaningful consultation with the Regulator and industry on any regulatory or fiscal changes and through formally placing MER and TVA as central to those considerations.

Constitutional Change

45. In the event of a Yes vote, the new Regulator should operate within a single regulatory regime with dual government control. With the vast majority of oil and gas fields likely to be within the Scottish portion of the UKCS in the event of independence, the natural conclusion would be for the new Regulator to transfer predominantly to the control of the Scottish Government upon independence. It also makes practical sense for the same Regulator to serve the rUK portion of the UKCS under an arrangement of shared competence.
46. The Regulator would in this case work to both the Scottish and the rUK Governments, and would provide the stewardship function for all areas of the UKCS in accordance with the policies set by the two governments. Initially those policies are likely to be the same or very similar, however, with different geological and economic features and challenges, policies are likely to diverge to a certain extent over time.
47. The Commission has recommended that the Regulator should have a formal right of consultation in relation to fiscal or regulatory issues, which could have an impact on investment or production in the UKCS. This should apply equally to decisions made by a Scottish and an rUK Government.
48. It would be appropriate for clear governance arrangements to be set to ensure swift decision making and as far as possible that policy implementation and maintenance is coordinated. The Regulator should have separate teams working on each jurisdictional area, as well as the geologically different regions of the UKCS, with the right expertise in place.
49. These teams should share skills and knowledge and collectively advise both Governments on the impact of any policy proposals – with a view to maintaining complementarity as part of the Regulator's formal right of consultation.
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6. REGULATION: HEALTH, SAFETY, AND ENVIRONMENT

Key Messages:

- **The UKCS has established a robust, world-leading health, safety and environmental regulatory regime.**
- **Government must build on the aim of making the UKCS the safest place to explore for and produce oil and gas worldwide.**
- **Health, safety and environmental regulation must be consistent with emergency response arrangements and the statutory requirements of the EU Offshore Safety Directive.**

Context

1. There are currently three main bodies responsible for the health, safety and environmental regulation of the offshore oil and gas industry:
 - a. the Department of Energy and Climate Change (DECC) is responsible for environmental regulation;
 - b. the Health and Safety Executive (HSE) is responsible for health, safety and hazardous material regulation; and
 - c. the Maritime Coastal Agency (MCA) is responsible for emergency response in line with the National Contingency Plan (NCP).
2. There have been several meticulous reviews of health, safety and environmental regulation of the offshore oil and gas industry beginning with The Cullen Inquiry post Piper Alpha. The recommendations made by Lord Cullen were accepted and implemented by Government and industry, resulting in a goal setting, safety case based health and safety regime.
3. The Macondo incident in the Gulf of Mexico instigated the Maitland Review³⁵ of the UK regulatory regime's capacity to mitigate the likelihood of such an incident occurring in the UKCS. Detailed responses to the Maitland Review and subsequent actions were undertaken by Government with input from DECC, HSE and MCA along with Oil and Gas UK³⁶.
4. These reviews overall have led to the establishment and development of a robust, world-leading health, safety and environmental regulatory regime.
5. The new Regulator proposed by the Wood Review will not have responsibility for Health, Safety or Environmental Regulation. However, it should be noted in this context that effective policy implementation and compliance in Health, Safety and Environmental Regulation has the potential

³⁵ *Offshore Oil and Gas in the UK*, G Maitland - an independent review of the regulatory regime 2011: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48252/3875-offshore-oil-gas-uk-ind-rev.pdf

³⁶ *Offshore Oil and Gas in the UK – Government Response to an Independent Review of the Regulatory Regime*, Department of Energy & Climate Change, 2012: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/84191/Offshore_Oil_and_Gas_in_the_UK_Maitland_Response_Final.pdf And the 2013 update to this response: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265799/update_government_response_independent_review_regulatory_regime.pdf

to contribute greatly towards the achievement of MER and TVA through enabling, not impeding, activity and investment, and building on the aim of making the UKCS the safest place to explore for and produce oil and gas worldwide.

Recommendation 1: The new Regulator in its stewardship role must in no way diminish the Health, Safety and Environmental regulation of the UKCS and must build on the aim of making the UKCS the safest place to explore for and produce oil and gas worldwide.

EU Offshore Safety Directive

6. On the 28th June 2013, the European Commission published the Offshore Safety Directive ('the Directive')³⁷. The objective of this Directive is to reduce as far as possible the occurrence of major accidents related to offshore oil and gas operations in European waters, to limit their consequences, improve response measures and improve and clarify European Union (EU) liability and compensation provisions. DECC and HSE are jointly leading the transposition of the Directive which must be implemented by 19th July 2015³⁸.
7. Whilst not impacting upon the overall ethos of the current regime in the UKCS, the Directive does require the establishment of a Competent Authority (CA) and therefore some changes will inevitably be required to the functions of the various agencies currently involved in the regulation of health, safety and environmental matters in the UKCS.
8. The establishment of a CA which is compliant with the Directive does not require there to be one single authority responsible for all health, safety and environmental matters, but it does require member states to demonstrate that the regime in operation amounts to and meets the requirements of a CA collectively.
9. Coordination between regulatory bodies will be critical in establishing a compliant CA with the overall responsibility for responding to major incidents. The CA should be a closely linked, multi-jurisdictional entity with the capacity to operate speedily and efficiently. Work is currently underway in the UK by the Senior Oversight Board³⁹ to facilitate all interested parties reaching an agreement on the delivery of a compliant regime for the UKCS.
10. The Commission believes that the strength of the health, safety and environment regime is a positive factor for encouraging investment, and the future sustainability of the UKCS. With the inevitability of some level of regime change, significant efforts must be made to ensure a smooth transition phase, whether in a move to Scottish independence or simply to meet the new EU requirements.
11. Any change to the structure of the regulatory regime requires careful consideration. There is an overall need for clarity in the role of authorities, with clear distinctions between the economic perspective, licensing, health, safety and environmental protection.

³⁷ European Commission, Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:178:FULL:EN:PDF>

³⁸ *EU Offshore Safety Directive Implementation and Implications for Environmental Regulation*, D. Saward, DECC Energy Development Unit, 2013.

<http://www.oilandgasuk.co.uk/downloadabledocs/1563/2.%20Derek%20Saward,%20DECC.pdf>

³⁹ Which consists of DECC, HSE and MCA – to ensure successful implementation of Maitland Review recommendations and ensure offshore regulatory regime remains fit for purpose. This is referenced in the first Government response to Maitland.

Recommendation 2: A single, strong, well-resourced and informed regulatory regime for health, safety and environmental protection of the UKCS must be established with oversight of all relevant duties, in line with the EU directive.

Structural Change

12. A cohesive, clear and informed regulatory regime is required for all health, safety and environmental duties, the specific composition of which might take several forms. Any change in the regulatory structure must ensure that clarity remains for industry in terms of expectations set by the review of safety cases and establish consistency of practice in inspection of assets and in sanction processes. Both personal and process safety must be considered by the health and safety regulator and industry in all aspects of operations.
13. In the event of structural change, for example through the creation of a single body tasked with regulation of health, safety and environmental protection, environmental protection must remain well-resourced and not merely seen as an adjunct to health and safety, ensuring that the regulatory function is well resourced with expert personnel across all aspects.
14. The approval of Oil Pollution Emergency Plans (OPEPs), the review of environmental aspects of licensing bids and the review of Environmental Assurance Plans (EAPs) should lie with the environmental regulator, in addition to the annual reporting of and analysis of statistics on environmental matters.

Recommendation 3: The regulatory solution for health, safety and environmental protection, must be consistent with emergency response arrangements and the statutory requirements of the EU Offshore Safety Directive.

Constitutional Change

Health and Safety and Emergency Response: A shared approach

15. In the event of a Yes vote, the establishment of a single regulatory regime for health, safety and emergency response in the UKCS would contribute towards providing clarity and comfort for industry.
16. This would require dual governmental policy control over the relevant regulatory bodies by the Scottish and rUK Governments, in a similar manner to the shared arrangement advocated for in this report in relation to the stewardship and licensing functions of the new Regulator. A shared approach would reduce uncertainties, maintain continuity for projects going forward and reduce compliance costs for both Government and industry.
17. The single regime could be formed through arrangements of shared competence being established in relation to the offshore functions of the HSE and the MCA and all other associated organisations with responsibility over emergency response.
18. Any potential barriers that might result from border variations should be removed, easing the movement of personnel, infrastructure and installations throughout all of the UKCS. Those arrangements should seek to ensure that a cohesive regime is maintained which is compatible with the Offshore Safety Directive and retains the world leading standards of safety in the UKCS.

Health and Safety and Emergency Response: A separate approach

19. Any future move to a wholly separate Scottish regime for offshore health, safety and emergency response would require meticulous planning and consultation, over time, in order to minimise disruption and maintain continuity.
20. If the Scottish Government chose to develop a separate Scottish HSE and Scottish MCA, continuity and minimal disruption must be ensured throughout any transitional phase. A transitional phase would aid in the development of skills, embedding appropriate expertise in Scotland.
21. The creation of any new body must build towards the vision of making the UKCS the safest place to explore for and produce oil and gas worldwide. The aspiration should be for visibility and continuity over the short-term, minimum disruption in the medium term and clarity for the long-term.
22. Current practices in health, safety and emergency response in the UKCS are, as with licensing, regarded by many as exemplary and these standards of operation must be maintained throughout any transition period and beyond.

Environmental Regulation

23. Environmental Regulation of the UKCS is currently the responsibility of DECC. Assuming this remains to be the case following the implementation of the Offshore Safety Directive, in an independent Scotland these functions should transfer to the Scottish Government in so far as the Scottish portion of the UKCS is concerned.
 24. Responsibility over Offshore Environmental Regulation could potentially be given to Marine Scotland in light of the existing offshore environmental duties carried out there. The Scottish and rUK authorities should continue to work collaboratively on environmental issues to maximise synergies and reduce costs for industry and for Government.
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7. DECOMMISSIONING

Key messages:

- **Government and the new Regulator should play a central role in developing a strategic approach to decommissioning with the aim of minimising costs to the operators and the taxpayer and achieving the maximum economic extension of field life.**
- **A clear strategy is required to mobilise investment by the supply chain to ensure that technology, capability and capacity is in place and that the TVA from decommissioning expenditure is optimised.**
- **To minimise the cost to both operators and the taxpayer, consideration should be given to encouraging a pipeline or cluster of decommissioning projects – creating economies of scale, sharing knowledge and techniques.**

Introduction

1. Decommissioning is a key part of the lifecycle of UKCS assets. To some extent the challenges associated with decommissioning depend on whether other objectives outlined in this report are successfully achieved. This is particularly relevant with regards to the objectives of MER, extending production, maintaining asset integrity and maximising TVA.
2. Some UKCS assets have now lasted over three decades, which in many cases has considerably exceeded their original planned design life. This is a testament not just to the quality of the original build but the ingenuity and diligence of the operators in ensuring they have remained operational for such an extended period of time.
3. The longevity of these assets is in part attributable to the investment from industry in response to increasing expectations of recovery from the UKCS. This has been driven by the emergence of new technologies, which have been developed by the industry to extend the life of older assets, including; 3D and 4D seismic, 3D reservoir modelling, improved directional drilling technology and subsea tieback technologies.
4. The development of additional local or nearby resources, which are capable of being accessed through use of these new technologies, has created a further economic incentive to extend the life of UKCS assets through improved inspection techniques, more reliable structural analysis and modelling. Investment in these areas has enabled operators to plan and implement asset life extensions safely and with greater confidence.
5. The costs of decommissioning are known to be high and will fall on both operators and Government, impacting ultimately on the taxpayer. As a result every effort should be made to defer costs until there is no sound economic or structural reason for decommissioning to be deferred and thereafter to minimise costs wherever possible.

Maximising Economic Field Life

6. The importance of maintaining UKCS assets was recently highlighted in the Wood Review and in the work of PILOT. It is estimated that in the region of 0.5-2 Bboe could be at risk if these assets are decommissioned prematurely, whilst they still had the potential to act as part of the infrastructure of a new development.

7. The Commission believes that the new Regulator and Government should play a central role in developing a strategic approach to decommissioning, in order to minimise costs to the operators and the taxpayer and defer cessation of production.
8. A key feature of this strategic approach is the acceptance that infrastructure should not be decommissioned until it can be assured that its removal will not impact on any potential new developments or redevelopments.
9. Some assets could continue playing an essential role as part of a new or existing piece of infrastructure beyond their own planned decommissioning date. For example, it could be supporting an export pipeline that might be used to connect into a new field.
10. The new Regulator should have the authority to determine the potential consequences of decommissioning a viable asset in terms of how it might impact on other "local" projects whether active, in planning, or considered to have potential based on subsurface data.
11. One consequence might be the transfer of ownership in part or completely to another party(ies) and the new Regulator should assist in facilitating that transfer with Government providing appropriate guarantees on future decommissioning tax relief.
12. The approval of a decommissioning plan should only be granted once it is clearly proven that the operators have made best efforts to maximise the recovery of hydrocarbons in that field and ensure that all options to generate TVA are considered.

Recommendation 1: Government and the new Regulator should work with operators to reduce decommissioning costs and avoid premature decommissioning of UKCS assets.

Decommissioning Pipeline

13. The new Regulator should have the authority to:
 - a. scrutinise the decommissioning pipeline to determine technical and operational viability and whether cost savings might be achieved by clustering and scheduling decommissioning projects – creating economies of scale and enabling the sharing of knowledge and techniques; and
 - b. delay, refuse or amend a decommissioning project, where there is opportunity to make an economic contribution, with the power to influence the future ownership of an asset.
14. This pipeline or cluster approach should aim to maximise the opportunities for using existing infrastructure for new developments whilst recognising the need to give the supply chain a clear vision for the services required and within what timescale.

Recommendation 2: The new Regulator should have the authority to delay, refuse or amend a decommissioning application where assets have the ability to continue making an economic contribution.

The Supply Chain Opportunity

15. Decommissioning creates a huge economic opportunity for the supply chain, both within domestic and international markets, and through the export of expertise internationally.
16. Expenditure on decommissioning accounted for 3.5% of total spend in 2013⁴⁰. However, most estimates suggest that the total cost of decommissioning activity in the UKCS could be between £30 billion and £40 billion (in today's prices) over the lifetime of the UKCS production. If the objectives outlined in this paper are not achieved, these costs could exceed £50 billion.
17. Whilst the feedback received by the Commission suggests that the UKCS supply chain are aware of the commercial benefits associated with decommissioning activity, this has yet to translate into sustained investment in developing the capability required to exploit this market effectively.
18. Significant investment is required to advance the design and production of large, heavy lift vessels, and other marine assets and services that are essential to facilitate decommissioning activity. This will account for a large part of the operator's decommissioning budgets. In order to optimise TVA, the supply chain must be aware of the opportunities and be encouraged to develop and quantify a business case for investing in this capacity.
19. Government has a role to play in developing this overarching strategy with industry and providing certainty about the investment opportunities.
20. Recommendations 1 and 2 will maximise the opportunities available for using existing infrastructure for new developments. This will have a positive impact on the supply chain as it will provide a clear indication of the services required and the timescale for future activity.
21. As experience of decommissioning activities grows it is likely that both operators and the supply chain will begin to develop new technology concepts and new operational solutions. It will therefore be important that Government works with industry – the operators and the supply chain, R&D providers (including universities and organisations such as the Scottish Oil and Gas Innovation Centre as well as supply side companies) in order to develop appropriate proposals for new technology development.
22. Government should consider whether it may be appropriate to co-fund these proposals where necessary.

Recommendation 3: Industry, supported by Government, should develop a clear strategy for the investment in the development of new technology and capability to ensure the UK supply chain is able to optimise the TVA from future expenditure on decommissioning.

Alternative use of UKCS structures

23. The Commission received a substantial body of evidence indicating that the removal of offshore jackets and the transfer of these structures onshore for scrapping may not necessarily be the correct approach in every case.
24. In some cases it could be appropriate for structures to remain in place and be used for other purposes, such as the development of artificial reefs that act as a marine habitat. This has proved successful elsewhere, in the Gulf of Mexico for example, and the concept has the support of some influential environmental NGO's – who argue that this represents a pragmatic solution.

⁴⁰ Oil and Gas UK – Activity Survey 2014

25. This could lead to a reduction in overall decommissioning costs, which will generate savings for both the industry and the taxpayer. Removing the need to dispose of one of the largest physical components would also widen the choice of disposal yards available to operators.
26. The OSPAR Convention⁴¹ currently rules out such an approach. However, the regulations are reviewed every five years and the Commission believes that there is merit in considering whether a change to the current regulations may be appropriate.
27. The relative costs and benefits of such an approach should be given careful consideration, especially given the importance of the marine and fishing industry to the Scottish economy.

Recommendation 4: Government should give further consideration to whether it may be appropriate for selected parts of UKCS oil and gas structures to be left in place and used for other environmentally advantageous purposes.

Tax Relief on Decommissioning Expenditure

28. The current fiscal regime allows for around 60% of decommissioning expenditure to be paid for by the Government in the form of tax relief. Furthermore, in order to improve industry confidence about the long-term availability of this relief the UK Government has now entered into contracts with some operators to guarantee the basis on which tax relief for decommissioning will be available – these contracts are known as Decommissioning Relief Deeds (DRD's).
29. The Scottish Government has confirmed that it will honour this commitment by providing the same level of contractual certainty for tax relief in the event of Scottish independence. This approach provides the highest degree of certainty over the treatment of tax relief on decommissioning activity under any constitutional arrangement.
30. In effect, a DRD reduces the cost of acquiring financial security for decommissioning by virtue of the fact that it is based on the post-tax cost of the decommissioning work as opposed to the pre-tax cost. The difference between these two scenarios can be as much as 50% of the cost.
31. The cost of acquiring financial security tends to be in the form of a fee paid to a bank for a Letter of Credit (LOC). The reduction in this fee enables the company to invest more and the contingent liability of the cost of the bank guarantee is reduced and as a result this increases the company's borrowing capacity and releases any additional capital for other investment opportunities.
32. Despite the introduction of these contractual commitments, evidence suggests that escalating decommissioning cost estimates and caution from the industry and lenders are still impeding negotiations on the transfer of assets. However, the Commission envisages that as the industry and lenders become more comfortable with the Deeds then the sale and transfer of assets to new owners is likely to become a less cumbersome process. This should help to facilitate increased investment by both existing and new operators, in existing infrastructure.
33. Recent developments with regards to decommissioning tax relief and contractual certainty are largely positive changes. However, as outlined in Chapter 4, the fiscal regime and tax treatment of decommissioning activity should be guided by the principles of stability and predictability, whilst remaining responsive to the changing dynamics of the decommissioning market, its challenges and opportunities.

⁴¹ The Convention for the Protection of the marine Environment of the North-East Atlantic (the 'OSPAR Convention') was open for signature at the Ministerial Meeting of the Oslo and Paris Commissions in Paris on 22 September 1992. The Convention has been signed and ratified by all of the Contracting Parties to the original Oslo or Paris Conventions.

8. TECHNOLOGY AND INNOVATION

Key Messages:

- **The exploitation of appropriate new technologies is one of the important keys to the future success of the UKCS.**
- **While new technological advances have made a significant contribution to the UKCS, the level of investment in R&D in the UK has remained consistently and significantly lower than in its main competitor countries.**
- **It must be recognised and accepted that oil and gas related R&D is not solely the responsibility of the major oil/gas operators.**
- **Government and industry must work in partnership to improve the international reputation and competitiveness of the indigenous supply chain.**

Context

1. Access to the remaining 'yet to find' resources in the UKCS will require significant progress in improving capital, cost and operating efficiencies through focused technology since remaining fields are generally smaller and their resources more difficult to extract.
2. Since the first major discovery at the West Sole gas field was made in 1965, technology development has played a significant role in the growth of the oil and gas industry. As the industry spread out from the relatively shallow waters of the SNS and into deeper waters WofS and the NNS, the engineering challenges grew substantially.
3. Whilst many of the responses to these challenges were incremental, built on existing techniques and technologies, a number of breakthrough technologies were also developed. Amongst these were the now iconic 3D Seismic and Long Reach Horizontal Drilling techniques – without which the story of the UKCS would have been very different.
4. While new technological advances have made a significant contribution to the UKCS, the level of investment in R&D in the UK has remained consistently and significantly lower than in its main competitor countries.

Government approach

5. Government recognises that new technologies play a vital role in Maximising Economic Recovery. However, the Regulator currently has no role in encouraging their development and use by operators. As a consequence the UK Supply Chain suffers from a lack of industry and state R&D support compared to many of its competitors.
6. Past approaches by Government to driving technology and innovation have achieved varying degrees of success. This is mainly a result of:
 - a. the short-term focus of investors;
 - b. the scale and financial capacity of the technology developer; and
 - c. the significant costs that come with the development and application of new technology to drive ultimate recovery within the UKCS.

Box 6 : Investment in R&D

- The former UK Energy Minister, the late Malcolm Wicks, stated in his Report on Energy Security 2009⁴², that:
- *“The UK does not compare well with other countries. This is partly a result of the UK not having a major industrial base in the energy sector.”*
- In 2013 both Scottish Enterprise and the UK Government published information that showed the oil and gas R&D spend across the whole of the UK only amounts to 0.3% of sales. By comparison, it is notable that the main competitor of the UKCS, Norway, has achieved a spend of 4% of sales.⁴³
- Looking specifically at public sector funded R&D, a report issued by Research Councils UK (‘RCUK’) in November 2013 stated that “the UK spends relatively little on energy R&D in comparison to international competitors. The resources expended are out of alignment with ambitious energy and climate change policy goals.”⁴⁴
- This report assessed the R&D budgets reported to the IEA (International Energy Agency) by the UK research councils, key government departments (DECC, BIS, DfT CLG) and other major funders such as the Energy Technologies Institute (ETI) and the Technology Strategy Board (TSB). It did not consider the Devolved Administrations or the former Regional Development Agencies (RDAs). However, with the exception of Scottish Enterprise, the level of additional funding into oil and gas R&D is likely to have been minimal. Scottish Enterprise R&D spend is around £3 million per annum⁴⁵.
- The RCUK report says that the budget for oil and gas R&D in 2012 in the UK was a mere £4 million which was less than half of that spent on coal, and most of the £35 million budget for fossil fuel research is focused on carbon capture and storage (CCS).
- Overall the UK has fallen back to 19th position in the IEA rankings and 14th within Europe in terms of energy R&D spend per unit of GDP. By comparison, Norway is 6th, spending around double that of the UK⁴⁶.

Industry Approach

7. It is difficult to accurately calculate the industrial spend on oil and gas R&D as companies tend to keep these details confidential. However, it is possible to examine the records of the UK’s Industry Technology Facilitator (ITF) which is an organisation owned and funded by the industry (31 major global operators and service companies) to assist in setting up collaborative technology projects.
8. ITF was set up to support the UKCS. Since its inception in 1999, ITF was responsible for launching more than 190 joint industry projects (JIPs), with a portfolio of around 37 on-going projects and supported by around £16 million direct member investment.

⁴² *Energy Security: A National Challenge in a Changing World*, August 2009, Malcolm Wicks MP.

⁴³ *The 2010 R&D Scoreboard, Top 1,000 UK & 1,000 Global Companies by R&D Investment* - Department for Business, Innovation & Skills

⁴⁴ *Investing in a Brighter Energy Future: Energy Research and Training Prospectus*, 13 November 2013, The Research Councils UK Energy Programme: *Investing in a Brighter Energy Future: Energy Research and Training Prospectus*, 13 November 2013, The Research Councils UK Energy Programme

⁴⁵ http://www.scottishenterprise.com/~media/SE_2013/Knowledge%20Hub/Publication/Oil%20Gas%20Strategy%20Progress%20Report%202013.pdf

⁴⁶ Ibid.

9. However, due to difficulties obtaining funding for projects, it ultimately internationalised many aspects of its operations and set up a number of overseas offices. As a consequence many of these projects involved foreign companies, making it difficult to determine the benefit to the UKCS.
10. As part of their Oil and Gas strategy published in 2013 the UK Government has now committed to "*reprioritis(ing) the ITF's focus toward the UKCS*". At this stage it is unclear how this might be achieved. This must not mean that the ITF's knowledge of the global industries' technology needs is undervalued.

Future approach

11. First and foremost, it must be recognised that oil and gas related R&D is not solely the responsibility of the major oil/gas operators.
12. Equally, it has to be understood that with the change in the balance between major operators to the considerable crop of smaller operators, the significant private sector funding streams that once supported R&D are no longer as accessible.
13. The exploitation of appropriate new technologies is one of the important keys to the future success of the UKCS. The route to accessing those new technologies can either be through encouraging the application of emerging technologies that offer solutions which the UKCS may benefit from, or through focussed development programmes aimed at solving specific industry needs.
14. The latter will allow for the growth of TVA by commercialising the output from university and/or supply side R&D programmes. The export potential of this output could be significant.
15. There are three fundamental issues to address:
 - a. the size and scope of the technology challenge;
 - b. how to obtain industry support for R&D; and
 - c. how to ensure new technology is able to be properly tested and evaluated.
16. In the context of defining the challenge, delivery can be achieved in two ways:
 - a. **Collaboration:** by drawing together the knowledge bases within PILOT, ITF and the new Scottish Oil and Gas Innovation Centre in order to build a coherent view of the key technology needs, from reservoir to export line, critical to the future of the basin as a whole; and
 - b. **Regulation:** awarding the new Regulator new powers that require operators as part of their development plan to submit proposals for technologies that could potentially improve the field economic recovery rates.
17. In order to obtain industry support it may ultimately be necessary to develop a carrot and stick approach, consisting of a mix of incentives and obligations written into all future licence agreements.

Future Investment

18. A government driven programme aimed at stimulating supply chain industry investment in R&D, innovation and technology development could deliver a range of positive outcomes. There are particular areas that require the leadership of government to act as a catalyst for investment and which would benefit from the use of licensing and stewardship levers by government to enable progress.

19. Government and the new Regulator must work with the industry at all levels to ensure the UK is at the forefront of the development of technology in both the UKCS and in global markets. This is particularly needed for, and relevant to, the broadened base of investors in the UKCS with smaller new entrants unlikely to have either funds for R&D or access to the onshore drilling and production where new technologies can be tested without the risks of offshore tests.
20. The new Regulator should play a strong role in the development of an R&D strategy to be implemented through the Research Councils, the Scottish Funding Council and other appropriate bodies leading to new technologies and knowledge that can be applied in support of the aims of the industry and Government not just in respect of MER but also in maintaining a healthy indigenous supply chain and therefore reinforcing TVA.
21. In order to part finance this strategy the new Regulator and Government should evaluate the potential for including an R&D commitment element to new licences, potentially as a percentage of the level of investment in a project and other costs, but offset by an R&D tax allowance. This could be similar in operation to the Norwegian system.

Recommendation 1: Government must be the catalyst for investment by the indigenous supply chain through the establishment of R&D and innovation demonstration programmes where optimal national benefit can be obtained.

Centres of Excellence

22. Sustainable global competitiveness needs to be established through the creation of Centres of Excellence in selected areas of strength and value. These centres of excellence need to deliver outputs that achieve industry acknowledgement of UKCS leadership and contribute sustainable value to the economy.
23. The Commission supports the Scottish Oil and Gas Innovation Centre as an example of a centre of excellence that has the means of developing collaborative research projects across and between universities, industry and other research centres.
24. The Commission recommends that this initiative receives appropriate levels of long term financial support which can be used to lever in industrial funding and that it should put in place clear and practical mechanisms for commercialising research results.

Recommendation 2: In support of TVA, Government must expand investment in R&D in oil and gas both directly and through centres of excellence that can facilitate collaboration between operators, the supply chain and Government in relation to critical technology needs.

Technology Testing

25. The testing of new technologies offshore, particularly 'down hole' or 'sub-sea', presents considerable challenges as well as potential rewards. Companies are reluctant to pioneer new technology, creating a culture of a 'race to be second'. This is an issue which must be dealt with as it can greatly impede the progress to the market of some potentially important technologies.
26. According to the UK Government's Oil and Gas strategy paper the time taken to get new technologies from proof of concept to market penetration is said to be faster in Norway than in the UKCS. Scottish Enterprise research suggests that the average time from proof of concept to market penetration in the oil and gas industry worldwide is in the order of 16 years but there is evidence that the UKCS takes significantly longer than this.

27. By contrast, Norway is achieving its technology goals, set out in its OG21 framework, and has successfully accelerated development from proof of concept to market penetration in around 8-10 years.
28. Operators are extremely risk averse when it comes to testing new technologies. Whilst an increasing number of shore-based test facilities are now available live testing remains problematic.
29. Technology trials in a realistic environment are a critical part of the development process. Some trials can be conducted onshore but others will need to be conducted offshore with all the costs and risks that entails.
30. The Commission recommends that the Regulator and Government work with the industry to determine what barriers exist to offshore trials on the UKCS compared to those on the Norwegian Continental Shelf and to work to develop ways of overcoming them.

Recommendation 3: Processes targeting improved technology testing are needed to improve the “time to market” of new technologies.

The Supply Chain

31. Industry representative bodies such as Subsea UK and the Society for Underwater Technology must be encouraged to collaborate more closely with Government departments and agencies involved in promoting exports in order to: share market intelligence, gain a more comprehensive understanding of overseas opportunities and to monitor the reputation of indigenous products and services.

Recommendation 4: Government and industry must work in partnership to improve the international reputation and competitiveness of the indigenous supply chain.

9. SKILLS

Key Messages:

- **A window of opportunity exists to establish a world class generation of new professionals and the future visionary leaders of the oil and gas industry in the UKCS.**
- **There is an over-emphasis from industry on short term solutions and recruitment strategies to attract already skilled, qualified and experienced personnel rather than on developing sustainable skills to meet future needs.**
- **A balanced mix of short, medium and long term objectives is required for sustainable talent and skills development and investment in the UKCS.**

The Skills Gap

1. The current skills gaps in the UKCS are not a new phenomenon. This is a challenge which has been recognised by industry and, while changing in specifics over the decades, creates both impediments to companies taking advantage of opportunities and contributes markedly to the escalating costs of doing business in the UKCS.
2. The window of opportunity to tackle the skills gaps is growing smaller as the UKCS landscape changes, and new oil and gas provinces emerge and develop. The Commission believes that action must be taken now before that opportunity is lost.
3. The Skills gaps in the oil and gas industry affect the capacity and future sustainability of all involved parties: the oil and gas industry at all levels in the supply chain; Government; regulators; and academia. There is some confusion amongst stakeholders around the roles and responsibilities of the various sectors to take a lead on skills development.
4. Training and education is offered by a mix of providers – from companies providing internal training, programmes delivered by commercial providers or membership bodies, through to open award-bearing courses offered by educational institutions.
5. Some of this provision is supported through government funding but much of it is not. As a result no single body has the authority or power to direct, regulate and/or control what is offered. Inevitably much of the provision will be dictated by market demand, which will often focus on the short-term need rather than a long-term vision.

Recommendation 1: As a priority, Government must use its levers to counter the impact of long-term industry under-investment in skills, and the impact of the inflation of wages

Short-term needs and Long-term planning

6. In many competitor oil and gas regions there is an expectation that those who are granted licences should contribute to the development of local talent. It is a strategy that could yield real benefit for the future. However, the UKCS has not taken this approach, with a consequent lack of strategic oversight and monitoring of local talent development.
7. While the industry acknowledges the value of government initiatives, there remains a sense of lack of cohesion and coordination. Greater collaboration amongst providers remains an aspiration and work to this end is already visible through a number of initiatives, such as the establishment of Energy Skills Scotland (ESS) in 2013.
8. The development of skills which capitalise on the current potential of the industry remain a priority for Government and have resulted in the production of an Energy Skills Investment Plan (SIP). Current work is on-going by OPITO to establish the needs of industry in terms of skills – the results of which should be available by Summer 2014, and will inform the future direction of the SIP.
9. To establish a formal, coordinated link between industry and education an annual data collection exercise, such as that currently being conducted by OPITO, should be undertaken. This exercise will identify current skill needs of the industry in a clear and recurring format, allowing for precise identification of the areas to which colleges and universities should respond in their outcome agreements with the funding body (Scottish Funding Council). Government should provide additional funding for students in identified priority areas.
10. There are some constants in terms of skills gaps, with engineers and geoscientists remaining a high priority. Strategically there remains a high level of need for “experienced” staff, particularly those with management potential and/or experience. Additionally there is a lack of high quality drilling supervisors in the UKCS and a widespread recognition of the importance of highly skilled project managers and controllers.
11. Industry is focusing to an ever greater extent on recruiting staff with proven experience, rather than providing opportunities and the necessary support for inexperienced individuals to gain experience in a safe environment. **The corollary has been an over-emphasis on employing skills rather than on developing sustainable skills to meet future needs.** This has resulted in a focus on short term solutions and recruitment strategies to attract already skilled, qualified and experienced personnel.
12. Alongside recruitment an industry-wide effort should be made to develop staff in a more systematic manner, through induction processes supported by tenured mentors with significant experience in the field. With a constrained pool of experienced people and the desire to always hire the ‘perfect’ candidate, there can be insufficient emphasis on individual skill development.
13. The global marketplace for skills is vast and competitive, with the UKCS frequently losing home-grown talent to overseas opportunities. Compensation for appropriate skills is therefore spiralling out of control, making some projects in the UKCS uneconomic as a result. The widespread ‘poaching’ of skilled, experienced individuals remains a real problem not only in Scotland but globally.

Recommendation 2: An excellent skills base must be established both to meet immediate and long-term future needs.

Roles and responsibilities

14. The opportunity exists for the UKCS to take a leading edge in skills development, but this will require a clarification of roles and responsibilities.
15. The role of government should be:
 - a. to fund investment in the skills areas essential to prolong the UKCS, in the geosciences, in engineering and in the management of projects and resources.
16. The role of industry is to:
 - b. invest in long term skills development, building on formal qualifications, safe mechanisms to grow expertise in application and to work with others to grow continuous learning amongst the workforce.
17. Academia needs to:
 - c. be attuned to industry needs and to work together to ensure all subject and disciplinary skills are provided as part of a partnership approach, while investing with government in areas of niche specialist research capacity growth.
18. Opportunities exist for skills programme developments that support late-life and extended-life field operation, including EOR, enhancing ageing asset integrity, field extension and management, subsurface specialisms, innovative technologies, collaborative working and decommissioning. Equally career development programmes aimed at raising technical to supervisory skills capacity are required.
19. As with other aspects of maximising potential, stakeholders tend to agree that coordination and the encouragement of collaboration is an important role for the new Regulator, in seeking to 'solve' the skills challenge. The new Regulator should therefore act as a catalyst for future investment in skills development from both industry and Government, through stewardship, funding, licensing and regulation.
20. The skills and employment domain continues to be highly influenced by economic factors affecting the industry more widely and cycles of investment and constraint have impacted the attractiveness of the industry as an employer.
21. The visibility and attractiveness of the industry to school leavers and graduates is not currently optimal and a lack of recruitment can only exacerbate this issue, together with the impact of high levels of retirement. There is also evidence to indicate that young people from schools, colleges and universities are more attracted to the expanding renewables sector.

Recommendation 3: The Regulator should act as a catalyst for future investment in skills development from both industry and Government, through stewardship, funding, licensing and regulation.

A regulatory mandate

22. The prevalence of and reliance on contract workers, estimated by many to be as high as 80% of workforce, continues to be a barrier to skills development and investment in CPD and career progression.
23. A balanced mix of short, medium and long term objectives is required for sustainable talent and skills development and investment in the UKCS, and a stronger future regulatory mandate should

seek demonstrable competence across both core and contracted staff for licence holding companies.

24. The development of systems to enhance knowledge transfer must be made a priority. Greater awareness of the role of higher education and what it can bring to the "world of work" would be advantageous for the basin. An industry wide mentoring scheme could facilitate knowledge transfer between staff approaching retirement and recent graduates and mid-career positions.
25. There remains a challenge in terms of filling middle management positions due to the balance of skills and experience required, especially in managing projects. Skills development models need to accommodate the three essentials;
 - subject knowledge;
 - experience; and
 - management capacity.

Recommendation 4: A stronger future regulatory mandate should seek demonstrable competence across both core and contracted staff for duty holding companies.

A sustainable future

26. There is a chance now for industry to work with academia, supported by Government, to establish world class technical and graduate programmes with the goal of establishing a world class generation of new professionals and the future visionary leaders of the oil and gas industry in the UK.
27. The pursuit of TVA must include a governmental consideration of skills capacity development in the UKCS. This will ensure a sustainable skills development plan is produced, which will enhance the development of an internationally competitive supply chain in the long-term, whilst ensuring provision of required skills to maximise production in the short to medium term.

Recommendation 5: Industry in the UKCS should work with academia to establish excellent technical and graduate programmes with the goal of establishing a world class generation of new professionals.

10. TRANSITION

Key Messages:

- **The UKCS is now on the edge of transformative change by necessity and there are various transitional issues which must be given due consideration as a result.**
- **Change must be managed and implemented in a way which encourages, and does not impede, the required investment.**
- **In order to deliver continuity for the industry, there should be a coherent regulatory approach to management and implementation, whether under a single or dual jurisdiction, post September 2014.**
- **This will require a positive approach from governments and their departments to evolving policy with a view to achieving TVA, encouraging investment and safeguarding the interests of society and the environment.**

Context

1. It is important in any industry where regulatory or fiscal change is on the horizon that the transition to a new structure or to new rules is handled carefully. The UKCS is now on the edge of transformative change and there are various transitional issues which must be given due consideration as a result.
2. This inevitable change must also be seen in the context of the Scottish independence referendum on 18 September 2014, which represents the potential for constitutional change and a different but related set of transitional issues to be addressed.
3. These two sets of circumstances are not mutually exclusive and must therefore be carefully managed by both the Scottish and the UK Government in the best interests of the industry and of the people of Scotland and the United Kingdom.

UK Governance Structure

4. Following the publication of the Wood Review, it is clear that a new governance structure for the UKCS is likely in so far as stewardship of its natural resources is concerned. Stability and predictability are imperative not only with respect to the fiscal arrangements for the oil and gas industry but also with respect to the regulatory framework within which it is operating.
5. Sir Ian Wood has demonstrated convincingly that a new, more proactive and effective, form of regulation is required and the industry appears largely to be in favour of this. However, this change must be taken forward quickly and in close consultation with the industry to ensure that a period of uncertainty does not contribute further to the sub-optimal business conditions pertaining in the UKCS.
6. The UK Government and the Scottish Government have both made clear their strong support for the recommendations within the Wood Review and the UK Government have announced that it plans for a CEO of the new Regulator to be appointed by July 2014 and for an interim body to be established by October 2014. These timetables must be adhered to and Government and the new Regulator must be swift in setting out a clear framework for this new governance model and a clear strategy.

UK Fiscal Regime

7. Changes proposed within this report should be carefully considered by both the Scottish Government and the UK Government and used to form clear policy proposals in relation to the future fiscal regime for the UKCS.
8. The UK Government has now announced their own review into the fiscal regime to assess its appropriateness for a mature region such as the UKCS, the results of which will be announced at the Autumn Budget Statement 2014. The Commission proposes that the recommendations contained within this report are considered as part of that review.
9. It is important that any changes to the regime, even when they are considered to be in the positive, should be properly consulted upon, and should be confirmed and implemented within a well-publicised timescale to enable the oil and gas industry to take full account of any such changes within their future business plans.
10. It is of paramount importance that during any transitional period with respect to changes to the fiscal regime the rules in relation to applicability are made absolutely clear to ensure transparency and certainty to aid companies' investment and planning decisions.

Decommissioning under the UK Government

11. The Decommissioning Relief Deed has been welcomed by the industry due to the certainty it brings in relation to the treatment of decommissioning costs and due to the reduced burden on industry in bearing those costs.
12. The effects of this are yet to be seen in the way operators deal with the transfer of assets and the speed at which assets are being decommissioned. The introduction of a more proactive program for decommissioning, led by the new Regulator, will be a catalyst for long term planning based on an industry wide strategy, with greater certainty in relation to costs.
13. Again, since the costs associated with decommissioning are a major factor affecting commercial decision making it will be important for any new strategy to be sensitive to those decisions and the impact they can have on investment.

Recommendation 1: In relation to any regulatory or fiscal regime change within the UKCS, the aspiration should be for visibility and continuity over the short-term, minimum disruption in the medium term and clarity for the long-term.

Constitutional Change

The UKCS Regulator

14. In the event of a Yes vote, the Commission believe it would be important for maintaining sustained investment for the Scottish Government and the UK Government to agree a joint approach to the establishment of the new Regulator for the UKCS as proposed by the Wood Review.
15. Whilst the Scottish Government propose independence day would not be until March 2016, it would be important for the Scottish Government to play a large part in the development of this Regulator and the implementation of Sir Ian Wood's recommendations.
16. Under independence, the boundaries between the Scottish portion of the UKCS and the rUK portion of the UKCS would be subject to negotiation. This will be guided by well-established principles of international law.
17. International precedent tells us that the vast majority of fields will be within the Scottish portion of the UKCS, which leads to the natural conclusion that the new Regulator should transfer predominantly to the control of the Scottish Government upon independence. It also makes

practical sense for the same Regulator to serve the rUK portion of the UKCS under an arrangement of shared competence.

18. The Regulator would in this case work to both the Scottish Government and the rUK Government, and would provide the stewardship function for all areas of the UKCS in accordance with the policies set by the two governments. Initially those policies are likely to be the same or very similar, however, with different geological features and challenges, it may be appropriate for specific policies to diverge to a certain extent.
19. The Commission believe that the Regulator should have a formal right of consultation in relation to fiscal or regulatory issues, which could have an impact on investment or production in the UKCS. This should apply equally to decisions made by a Scottish and an rUK Government.
20. Clear governance arrangements would require to be set to ensure swift decision making and to ensure as far as possible that policy implementation and maintenance is coordinated.
21. These teams should share skills and knowledge and collectively advise both governments on the impact of any policy proposals – with a view to maintaining complementarity as part of the Regulator's formal right of consultation.
22. It would be very important for both governments to ensure that regardless of the outcome of the referendum, the establishment of the Regulator is not delayed. It is important for all concerned that this regulatory reform, as well as the recommendations within this report, are implemented quickly and with clarity of purpose, to ensure the advancement of MER and TVA.

Recommendation 2: Governments must facilitate a swift and transparent boundary determination to ensure certainty for industry.

Recommendation 3: The new Regulator should operate within a single regulatory framework with dual government policies.

The Fiscal Regime

23. It is of critical importance that the Scottish Government, upon a Yes vote, issue a timely and clear statement confirming its plans and commitments in relation to the fiscal framework to provide certainty for industry.
24. In particular, this should set out clearly the way in which individual companies' tax positions will be dealt with in the transition period and the UK Government must cooperate in order to ensure clarity and continuity for the industry.
25. Data transfer from the UK Government to the Scottish Government would be necessary in order to ensure effective continuity. Both governments must act in good faith, cooperating on areas of mutual national interest, and in recognition of the interests of the industry. This would also be necessary in relation to the transfer of licensing data currently held by the UK Government.
26. It has been recognised by the Wood Review and by this Commission that there is a need for much closer collaboration and consultation between the new Regulator and the Treasury. Further consideration should therefore be given to the structure of an independent Scotland's governance arrangement.
27. As a minimum, and regardless of the result of the referendum, the Commission has recommended that the new Regulator should have a formal right of consultation in relation to any fiscal or regulatory issue which could have an impact on investment in, or production from, the

UKCS. That consultation must be meaningful if it is to have the desired effect and it must have at its core, the principles of MER and TVA.

28. Both Governments should adopt a collaborative approach with regards to the operation of the fiscal regime going forward, with a view to maximising synergies, minimising costs and with a clear focus on providing clarity and certainty to the industry.
29. Putting stability and predictability as central to the fiscal regime, the Commission recommends that while basic policies may well differ between Scotland and the rest of the UK, as far as possible policy implementation and maintenance should be coordinated.
30. The new Regulator should serve both Governments and all regions of the UKCS, the Scottish portion and the rUK portion. Policy implementation and maintenance with respect to taxation should recognise that there will be some companies operating on both sides of the border and the new Regulator should therefore have a role in advising both Governments on maintaining complementarity as part of its formal right of consultation.

Recommendation 4: Both governments should adopt a collaborative approach with regards to the operation of the fiscal regime, with a view to maximising synergies, minimising compliance costs – with a clear focus on providing clarity and certainty to the industry.

Health and Safety Regulation

31. In the event of a Yes vote, the establishment of a single regulatory regime for health and safety with dual governmental policy control by the Scottish Government and the rUK Government would contribute towards providing clarity and comfort for industry, reducing uncertainties and maintaining continuity for projects going forward.
32. This approach would also reduce compliance costs for both Government and industry, maximising the potential for new investment and the initiation of projects already agreed in principle. It would ensure minimal delay to the project pipeline and encourage investment decisions in the UKCS over any transition period.
33. A single regulatory regime for health and safety would remove any potential barriers that might result from border variations, easing the movement of personnel, infrastructure and installations throughout all of the UKCS.
34. This could include arrangements of shared competence being established in relation to the Health and Safety Executive and all associated organisations with responsibility over Emergency Response, including the MCA and the Air Accidents Investigation Branch, ensuring that a cohesive regime is maintained.
35. Any potential future moves to establish a separate regime for the regulation of offshore health and safety – for example a Scottish Health and Safety Executive – would require meticulous planning and consultation with industry over time.
36. Continuity and minimal disruption should be ensured throughout any transitional phase.
37. Careful consideration would require to be given to the wider, and not insubstantial, remit of the Health and Safety Executive and any new regulatory body established over time must build towards the vision of making the UKCS the safest place to explore for and produce oil and gas worldwide.

Recommendation 5: A single regulatory regime for Health, Safety and Emergency Response with dual government policy control is preferred, providing clarity and reducing transitional uncertainties in order to maintain continuity and to minimise the compliance costs for Government and industry.

Environmental Regulation

38. This is currently the responsibility of DECC, and the associated functions are carried out by a team in Aberdeen. In an independent Scotland these functions should transfer to the Scottish Government in so far as the Scottish portion of the UKCS is concerned.
 39. Responsibility over Offshore Environmental Regulation could potentially be given to Marine Scotland in light of the existing offshore environmental duties carried out there. The Scottish and rUK authorities should continue to work collaboratively on environmental issues to maximise synergies and reduce costs for industry and for Government.
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Remit of Expert Commission

Context

Building upon the approach set out in the Scottish Government's Oil and Gas strategy, three overarching principles have been identified that Scottish Ministers believe should underpin the oil and gas fiscal regime under Independence:

- The fiscal regime must support and incentivise production.
- There should be long-term stability and certainty in the fiscal and regulatory regimes, including the commitment to formal consultation prior to future reforms, and specific clarity on the fiscal treatment of decommissioning costs.
- There are efficient fiscal incentives to maximise economic recovery rates.

In addition, it is important that any policy framework in an Independent Scotland ensures that:

- appropriate incentives are in place to support exploration and field development; and
- critical infrastructure is maintained and developed to maximise recovery.

The Oil and Gas Expert Commission's work should build on these principles and the overarching framework that has been set out in the report "*Maximising Scotland's return from oil and gas*".

Specific Questions

- i The Oil and Gas Expert Commission will consider specific proposals for providing long-term fiscal stability and predictability for the oil and gas industry in an independent Scotland.
- ii The Oil and Gas Expert Commission will consider any appropriate amendments to improve the fiscal regime. This should be consistent with the Scottish Government's objective of delivering a tax regime that *supports* production. As part of this, the Commission will consider evidence on other types of marginal projects in Scottish waters that might require additional fiscal support in the future.
- iii The Oil and Gas Expert Commission will consider options to increase competition and reduce entry barriers in the UKCS, including options to support exploration activity by both new entrants and established operators.
- iv The Oil and Gas Expert Commission will also consider specific arrangements for the North Sea licensing and regulatory regime in an Independent Scotland and, in consultation with the industry, examine options available to enhance the existing regime.
- v The Expert Commission, in consultation with the industry and other stakeholders, will examine how the fiscal framework in an independent Scotland will provide certainty for operators in regards to decommissioning.
- vi The Expert Commission will consider potential implications arising from the transition to separate Scottish and rUK jurisdictions for taxation, licencing and the offshore regulatory regime, to ensure that it will not have any adverse impact on the sector.

Membership

- **Chair: Melfort Campbell OBE** Chairman of Imes Group and co-chair of the Oil and Gas Industry Leadership Group. Melfort also sits on the Scottish Energy Advisory Board and is a board member of Scottish Enterprise. Melfort has 35 years' experience in the high integrity engineering business, over 30 years' experience in the oil industry, as well as defence, nuclear power and processing industry experience, and is a former commissioner of the Tax Reform Commission.
- **Professor Kemp** (Professor of Petroleum Economics, and Director of the Aberdeen Centre for Research in Energy Economics and Finance at the University of Aberdeen) has brought a wealth of experience and expertise not only in relation to the fiscal framework but more widely in relation to his knowledge of the future challenges and opportunities for the UKCS.
- **Professor Marcella** (Dean of Aberdeen Business School, Robert Gordon University) has to date conducted extensive research into health and safety management in the oil and gas industry internationally, and is continuing to conduct and commission research on the lessons needing to be learned for the future on these vital matters for the industry.
- **Dick Winchester** sits on the Scottish Energy Advisory Board and has 40 years of experience in the offshore oil and gas industry – 15 years in subsea operations and engineering, 25 years' experience running technology businesses and in developing and managing R&D programmes. Currently Managing Director of Pipistrelle Ltd, he brought additional industry experience and knowledge to the breadth of the remit of the Commission. Dick also writes a column on a range of energy issues for the Aberdeen Press & Journal "Energy" supplement."



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Riaghaltas na h-Alba

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