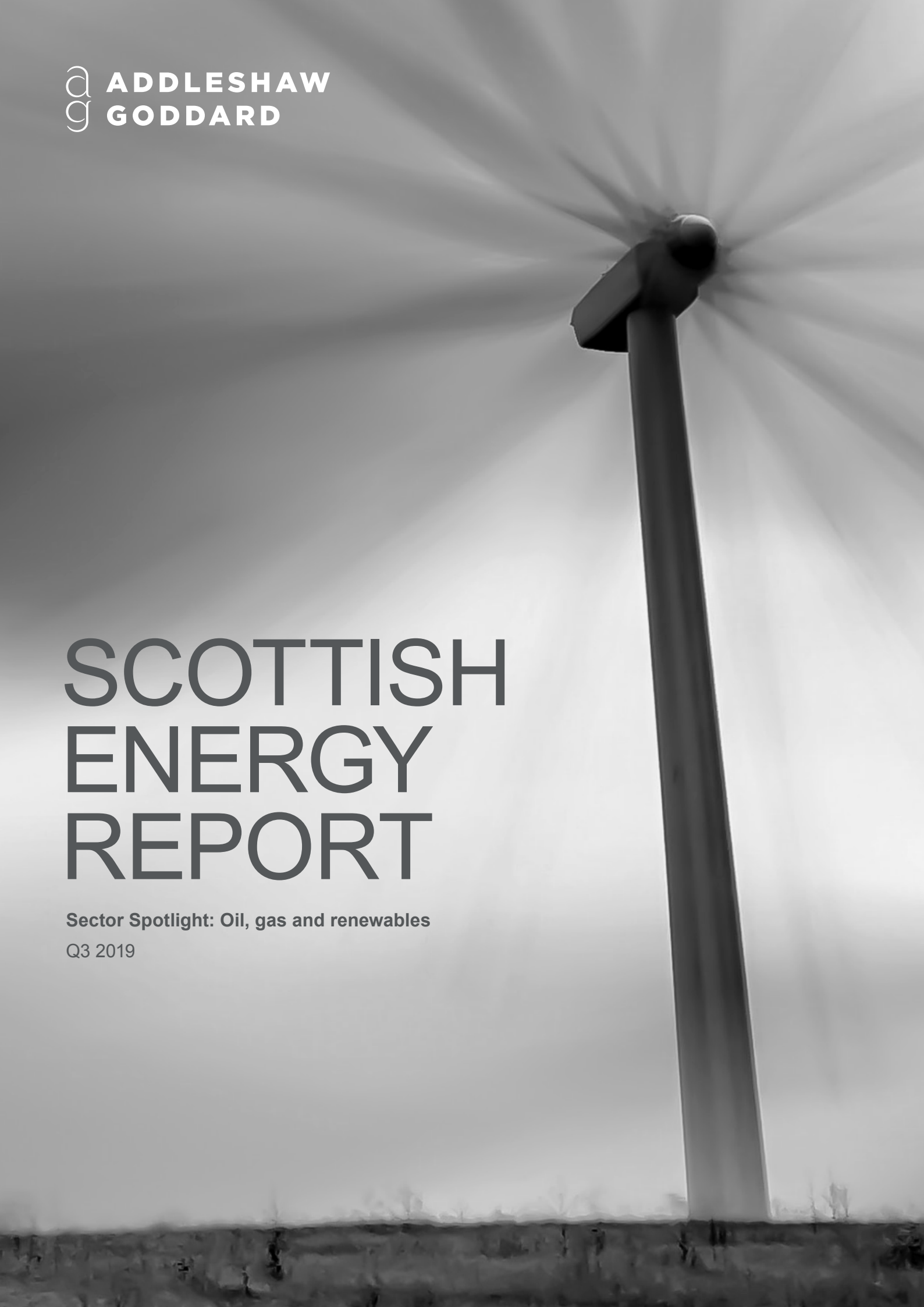
ADDLESHAW GODDARD



SCOTTISH ENERGY REPORT

Sector Spotlight: Oil, gas and renewables

Q3 2019

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ABOUT ADDLESHAW GODDARD

At Addleshaw Goddard, our business is about strong client relationships built on successful delivery across national and international markets. A real meeting of minds.

We are a premium business law firm offering an exceptional breadth of services. Our approach combines a deep understanding of our clients' businesses, markets and sectors with high-calibre expertise, straight talking advice and a collaborative team culture. By delivering what clients want wherever the need it, from high-value strategic advice to the everyday, we pride ourselves in a service which is high quality, focused, relevant and consistently excellent.

ADDLESHAW GODDARD – ENERGY & UTILITIES SECTOR

Wherever innovation is happening in the global energy market, Addleshaw Goddard is at the forefront, helping our clients anticipate and respond to change and to identify and capitalise on opportunities. Many businesses are actively looking at ways to be involved in the energy supply chain (either alone or with partners) whether to reduce costs, improve energy security, exploit commercial opportunities or enhance their green credentials.

However, making sound investment decisions in an uncertain market is risky. You need advisors who understand the uncertainties and can provide pragmatic, incisive advice that helps to minimise those risks.

Our International Energy and Utilities Group has extensive experience around power generation and renewable energies; from nuclear and gas to solar, biomass, wind and offshore marine. We act for clients all over the world on a diverse portfolio of matters across the sector. This broad coverage means we bring not only real know-how and experience but also new ideas and innovative ways of working.

AREAS OF EXPERTISE

- Anaerobic Digestions
- Energy Market Regulation
- Battery Storage
- Mining and Minerals
- Biofuels
- Networks
- Biomass
- Nuclear
- CHP
- Oil & Gas
- Decommissioning
- Solar
- District Heating
- Waste
- Downstream Energy
- Water
- Electric Vehicles
- Wind

FOREWORD

Scotland's energy industry is at a critical juncture: we have an internationally recognised oil and gas sector, with a concentration of skills, expertise and experience available to export around the world. The country is also better placed than anywhere else in the UK to transition to net zero carbon emissions, reflected in our earlier target date of 2045.

Environmental campaigning and the social drive towards cleaner energy production, coupled with the UK's commitment to net zero by 2050 and the Scottish Government's declaration that we are facing a climate emergency has created a fresh impetus for investment into renewables. At the same time the North Sea oil and gas sector is moving forward after a protracted downturn following the 2014 oil price crash.

The different parts of the industry have already made strides to collaborate in order to develop new technologies, share expertise and drive innovation. However, this is still in the early stages. As the oil price has recovered operators find themselves in a more manageable economic environment and the service sector has used technology to continue to drive efficiencies and reduce costs. However, innovation inevitably creates pressure on profits. Further co-operation is necessary to create sustainable conditions for more progress.

Oil, gas, onshore wind and solar are all mature markets; a significant opportunity is now offshore wind and the development of new assets in UK waters. The strike prices achieved in the most recent CfD auction, whose results were announced on 20 September 2019, show how far the industry has come and evidence not just the pace of cost reduction but also the potential to export our world-leading expertise to other markets.

Transitioning to cleaner forms of energy production over the medium to long term also provides huge opportunity, with many of the skills that exist in today's oil and gas sector able to transfer into developing better, more profitable renewable projects.

Challenges sit within the supply chain, which must work better with developers to support this transition. Government support to encourage this is therefore needed as part of an integrated industrial strategy.

Overall, the sector is well-placed to grow with strong appetite to invest for a long-term future in Scottish energy production evident among both domestic and international firms.

Addleshaw Goddard are delighted to have collected the views of some key actors in the Scottish energy sector, which we hope will give you a useful insight into its current and future prospects.

ALAN SHANKS
Partner, Head of Finance & Projects (Scotland)

+44 (0)131 222 9805
alan.shanks@addleshawgoddard.com

DAVID MCEWING
Partner

+44 (0)1224 965 417
david.mcewing@addleshawgoddard.com

EXECUTIVE SUMMARY

- Energy represents a key economic and industrial opportunity for Scotland
- Scotland's oil and gas industry will remain a crucial element of the energy system for the foreseeable future – supplying energy, but also expertise and skills to support the transition to a low carbon future
- We must look to capitalise on the significant opportunity presented by offshore wind
- Investment into developing technology that will support the transition to net zero is reasonably stable, but firms are struggling to raise sufficient support for early stage innovation
- There is still reticence within parts of the sector to refocus at the scale needed to drive meaningful profitability improvements to the renewables side of the market
- Government support at UK and Scottish level to encourage this remains critical

ECONOMIC SUMMARY

Graeme Roy, Fraser of Allander Institute

The energy sector is a key strength of Scotland's economy. It supports around 70,000 jobs across the country, with Scotland home to over 20 per cent of all those employed in the UK energy sector. Many more jobs are supported across supply chains and linked industries.

Over decades the sector has been a major source of investment, internationalisation and innovation – areas that other parts of the economy have struggled to match. Energy represents an enormous economic and industrial opportunity for Scotland.

Scotland's oil and gas industry will remain a crucial element of the energy system in the near future – supplying energy, but also expertise and skills to support the transition to a low carbon future.

Significant progress has been made in recent years to shift towards more sustainable forms of energy. In 2018, around 74 per cent of Scotland's electricity demand was met from renewables well above figures for the EU and UK.

But there remains much work to be done. Whilst production levels in the North Sea have risen in recent years, the remaining reserves are increasingly in technically challenging sectors. Capital investment – whilst picking up in recent times – remains fragile.

On renewables, both the scale of the investment and structural changes in our economy required to meet the target to be net zero by 2045 bring with them enormous economic opportunities, but also challenges.

It will require a massive upscaling in offshore wind and other forms of generation. This can only be achieved with a stable and supportive policy environment. It will also require a transformation in both heat and transport, areas where much less progress has been made.

Ensuring that Scotland's economy benefits from the supply chains, investment and jobs that will flow from this needs much more thought than has been the case thus far. But with the right policies – including close collaboration between both the UK and Scottish Governments – and leadership from the business community, Scotland's energy sector has much to look forward to.

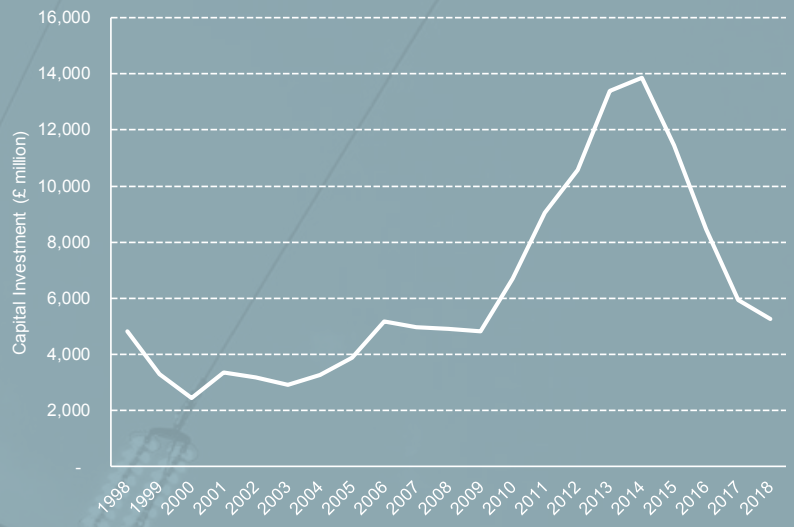
SCOTLAND'S ENERGY SECTOR IS A KEY SOURCE OF INTERNATIONALISATION, INNOVATION AND INVESTMENT

	2010	2011	2012	2013	2014	2015	2016	2017
	£MILLION							
UK exports	8,700	9,825	9,545	10,360	9,100	10,645	8,405	8,585
International exports	3,770	4,995	4,385	4,540	4,400	5,045	4,740	5,435
Total	12,470	14,820	13,930	14,900	13,500	15,690	13,145	14,020

Total exports from the Energy sector stood at **£14,020** million in 2017 – **17.2%** of Scotland's total exports. Exports from this sector increased by **6.7%** over the latest year.

In 2017, total turnover in the sector was **£43.8** billion. Between 2016 and 2017, total turnover in this growth sector increased by **5.4%** in nominal terms.

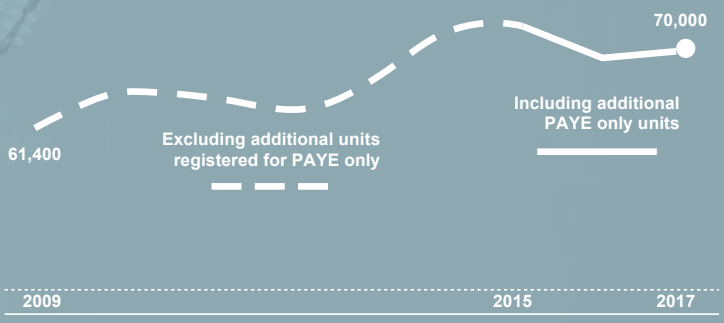
CAPITAL INVESTMENT REMAINS UNDER PRESSURE DESPITE GREATER FISCAL INCENTIVES



Source: Fraser of Allander Institute

SCOTLAND'S ENERGY SECTOR IS A KEY EMPLOYER, SUPPORTING 70,000 JOBS DIRECTLY AND MANY MORE THROUGH THE SUPPLY CHAIN AND WIDER BENEFITS

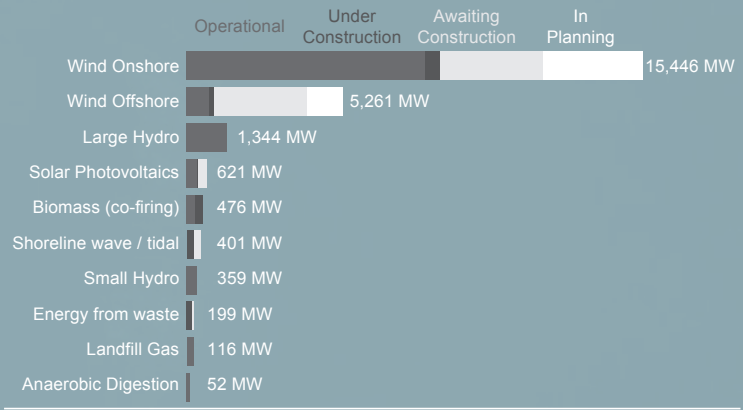
Employment in the energy sector
Scotland, 2009 - 2017



Source: Fraser of Allander Institute

PIPELINE OF INVESTMENTS SHOWS THE PROFILE OF ACTIVITIES COMING DOWN THE LINE

Pipeline renewable capacity by technology
Scotland March 2019



Source: Fraser of Allander Institute

OIL & GAS

David McEwing, Addleshaw Goddard

Scotland's oil and gas sector is coming out of a four-year downturn. The oil price has recovered but driving cost efficiencies remains of paramount importance for both operators and the service sector. Business confidence remains cautious, though significantly improved on 12 months ago.

Medium to long-term demand for oil remains despite net zero, and we are not seeing a drop in appetite to invest in exploration or production in either oil or gas. Indeed, several big energy firms have explicitly committed to gas for the foreseeable future.

Significant development capital has been invested, coming mainly from the big international firms, but we have also seen a rise in interest from global private equity. How this investment is deployed varies, but the overriding theme has been on how to bring offshore production costs down. New efficiency-driving technology is being developed, while carbon reduction on upstream infrastructure is also a key priority.

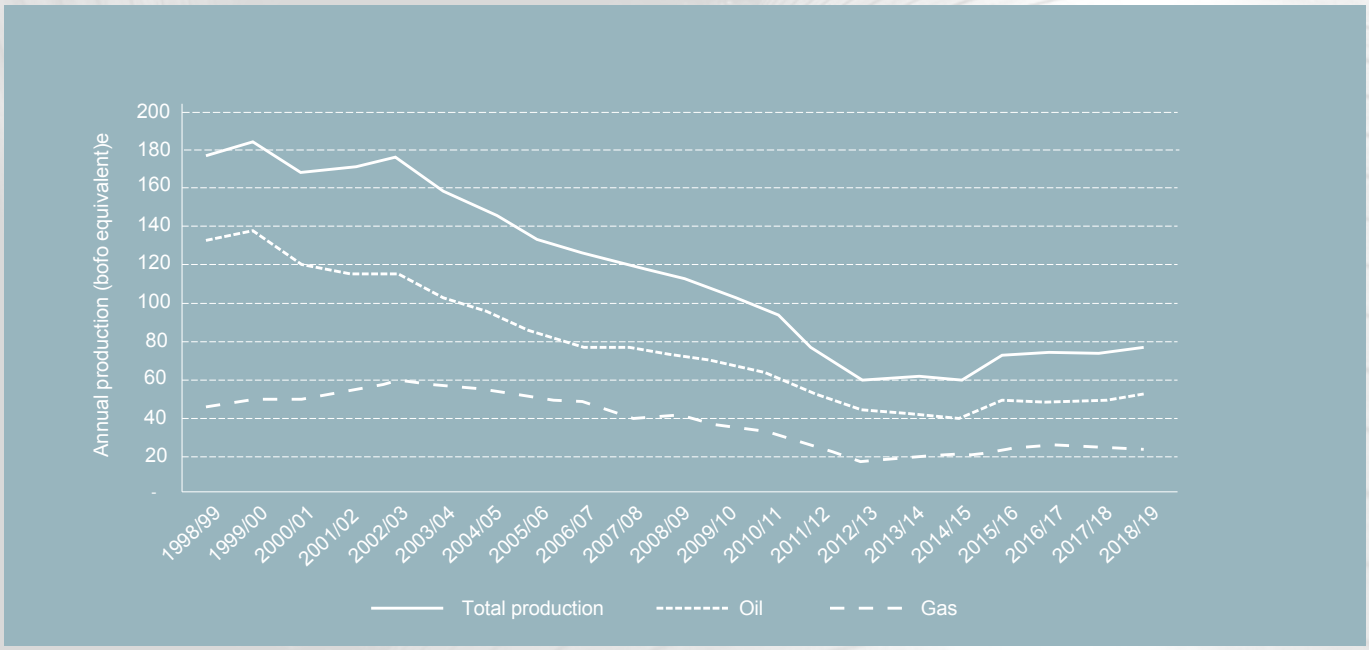
There is plenty of development funding for established projects and firms that already have the assets with foreign investment coming notably from Hong Kong, Israel, the US, and Norway. We're seeing lots of new, smaller entrants into upstream; these are nimbler than the established oil companies and can drive better margins on extraction through their use of newer technology.

The supply chain to downstream is lagging in investment though. Good work has been done by the Maximising Economic Recovery initiative to promote collaboration across the industry to support new tech investment, discovery of best practice, efficiencies and decarbonisation techniques. There is however, a real shortage of investment in early stage technology development firms and we are of the view that support from the government is needed to drive this.

Scotland's oil and gas industry has plenty of transferrable skills, with a hub in Aberdeen particularly; our offshore infrastructure can be used in offshore wind construction.

As an industry however, we need to get better at harnessing data and at onshore management of offshore assets. The use of technology to replace people has a knock-on effect on corollary businesses (helicopters, exploration vessels etc) so there is limited appetite to do this by incumbents; nevertheless, more onshoring of management would also support more diversity in the industry.

OIL AND GAS PRODUCTION HAS RISEN IN RECENT TIMES AS PAST INVESTMENT CONTINUES TO BOOST OUTPUT



Source: Fraser of Allander Institute

Findlay Anderson, Baker Hughes, a GE company

After four years of oil industry downturn, the past 12 months have begun to see a real shift in sentiment within the oil industry. Investment in new smaller fields has notably risen, helped by increasingly streamlined supply chain offerings. The significant drop in the oil price was a hugely important factor, putting pressure on operators' profitability and in turn, driving the supply chain to find ways of delivering cost efficiencies to support their customers. Previously stranded assets are now becoming economic, further supported by a greater incidence of subsea tie-backs, all of which means field developments are now economic, even at and below $55 a barrel.

The about-turn in confidence we are now seeing comes off the back of a year of reasonably consistent oil prices, providing a better level of commercial certainty for firms that were previously reticent about investing in longer term projects. Private equity funding, which has long been available to businesses in the supply chain, has over the past few years opened its doors to small-to-medium sized operators, bringing a new stream of funding to the market.

We see three trends dominating now and into the future in the oil and gas sector. Collaboration between operators and supply chain companies has greatly improved recently, supported by the Scottish Government's Maximising Economic Recovery initiative. Full service partnerships from reservoir to topside are increasingly common between operators and contractors, creating significant opportunity for efficiencies to be garnered. Revenue-and-risk-sharing models have also begun to appear as operators and contractors look for new ways to drive value from "life of field" relationships.

Among operators, there has also been a notable shift away from bespoke supply chain equipment demand, towards standardised and lower cost equipment produced on a much faster turnaround. The drive to control project costs and the influx of private equity funding, looking for quicker returns, have both played parts in this. Smaller fields are now more attractive off the back of a lower cost base, with production delivery coming sooner.

Thirdly, the traditional oil and gas operators are investing in the development of digitalisation across their businesses in order to harness the power of the data they produce from their operations. Some of the larger supply chain companies are also positioning to support the operators with digital service offerings and this relationship will be key to unlocking incremental efficiencies in production operations, potentially delivering hundreds of millions of dollars in revenue uplift over the coming years.

We see three trends dominating now and into the future in the oil and gas sector. Collaboration between operators and supply chain companies has greatly improved recently, supported by the Scottish Government's Maximising Economic Recovery initiative.

The outlook is therefore positive. However, one note of caution. The profitability is currently heavily weighted towards the operators while increased levels of risk are being shouldered by the supply chain. This needs to rebalance somewhat to ensure this critical relationship has a bright future.

Mike Tholen, Oil & Gas UK

Scotland has always been a pioneer in the energy sector, having been blessed with access to all forms of energy from coal and hydro to oil and gas and nuclear and more recently wind and solar. That spirit of innovation stands the country's energy industry in good stead for the future. It's equipped to be leading the game when it comes to transitioning the UK through to its 2050 net zero target. Indeed, that is why the country has been set and accepted an earlier net zero delivery date of 2045.

The sector has done much of the ground work to get this moving, particularly in onshore wind. We see a big opportunity for Scotland to lead the way on deep water offshore wind, a sector which is eminently fundable and now commercially attractive to investors. Developing the right technologies to deliver deep water offshore wind projects is key, and much of the technology we need has emerged from the offshore oil and gas sector and Scotland is actively seeking to seize a competitive advantage in deep water wind, building on its marine heritage.

In essence, there is a ready-made carbon storage supply chain in Scotland, ripe for investment and ready to go. There remains a need for clarity from both the Scottish and UK governments on future energy policy to support investment into these activities.

The outlook is an exciting one for Scotland and one which presents significant opportunities for the country's energy industry. The supply chain present in Scotland benefits from a sound baseload of work from the oil and gas industry and can help the sector to reduce its own emissions offshore, which will be a highly exportable capability. The skills within the supply chain can also support the growth of renewable energy both onshore and offshore.

Hydrogen and carbon capture and storage also looks like a particularly bright spots for Scotland, embracing both operators and their supply chain, who have considerable knowledge and expertise developed over years in the oil and gas sector. In essence, there is a ready-made carbon storage supply chain in Scotland, ripe for investment and ready to go. There remains a need for clarity from both the Scottish and UK governments on future energy policy to support investment into these activities. Some of this will come down to the right commercial framework supported by appropriate incentives and clarity of regulation but importantly, we need to understand what form of carbon trading scheme is put in place if we are to leave the EU and the existing Emissions Trading Scheme.

Gordon Farmer, Global Energy Group

Confidence in the oil and gas industry in Scotland has recovered over the past two years, though there remains considerable caution in terms of capital expenditure investment in the basin. Contract tendering on the capital investment side of things is currently active; less certain is whether those contracts advance.

Operational expenditure is more robust with order books looking stable at the moment in terms of upcoming activity. That said, timing and execution is beginning to slide, with an element of uncertainty persisting. This is holding back further investment in our view.

Opportunities for growth therefore, are perhaps most obvious on the operational side of the industry, where service firms have the ability to add value to existing operations. Operators are making good margins at current prices and competition in the service sector has put downward pressure on costs. Careful monitoring of this balance is going to be necessary to support sustainable business growth and investment in the future.

There is a growing acknowledgement by the industry that oil and gas companies need to transition into energy businesses. There is a strong traditional market here, and our skills and expertise complement those needed within alternative energy generation. Increasingly, we are extending our business into renewables and other energy markets. However, demand for oil and gas is going to remain for the foreseeable future and we will continue to service the sector. This is influencing where capital investment is being made.

We see a strong case for the Scottish and UK governments to initiate some form of support scheme to encourage capital spend in the basin; currently it is difficult to plan and invest in the service sector, even in partnership with operators. There needs to be some underlying certainty provided at government policy level to create sustained capital investment long term. Optimism is there for Scotland's energy market but it comes with a healthy dose of caution. Investment is needed to allow the basin to continue to thrive and support our domestic energy needs.

RENEWABLES

Alan Shanks, Addleshaw Goddard

Confidence in the renewables industry in Scotland remains positive. We have seen two years of growth and we are optimistic about the next 12 months within our business. There's a good level of investment into the sector with the secondary market in onshore and offshore wind being an important driver of activity. Market entrants include utilities, infrastructure funds, and private equity investors but also from those looking for long-term returns such as pension funds, who see operational assets providing 20 to 30 years of stable income at relatively low risk.

Onshore wind is now a very established technology and increasingly offshore assets are seen as a mainstream investment. Progress is evident with more new projects in Scottish waters moving from development to construction.

The secondary market for refinancing operational assets is also strong, with a much wider range of funders available now than was previously the case.

The sector is also adjusting to the changes in the subsidy regime available to onshore wind. Undeveloped onshore wind farms are now being bought and sold with particular interest in larger sites offering higher generation potential.

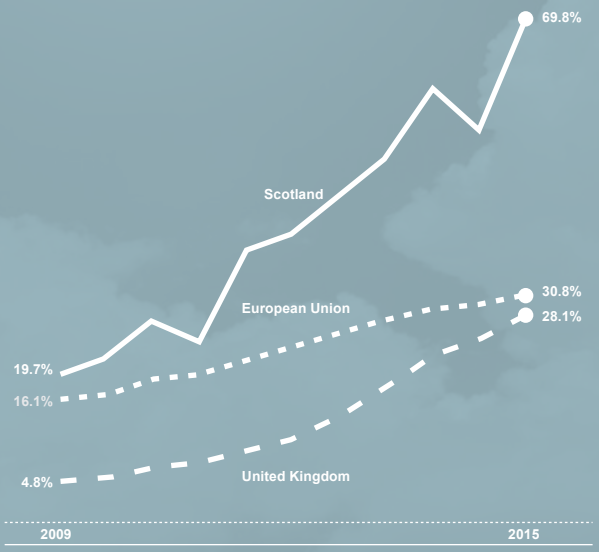
While in the past the market saw a rash of smaller wind developments supported by FiTs and ROCs, utilities and sophisticated developers are now investing in larger scale projects which they expect to deliver a return on a subsidy-free basis. The award of CFDs last week to four Scottish onshore projects which qualified for the Remote Island Subsidy was a further boost.

The continued availability of CFDs, the sector deal for offshore wind supported by the UK and Scottish Governments and the continuing efforts to reduce costs have all ensured that the UK is a world leader in offshore wind. However, it was disappointing that only two Scottish offshore projects were successful in Round Three. The impact of this remains to be seen.

So far there has been a failure to capitalise on the transferrable skills in Scotland's traditional energy markets. It was historically difficult to get oil and gas companies interested in renewables. That's changing now. Businesses in the hydrocarbons sector are now much more alive to the implications of solely focusing on oil and gas and are now taking that transformation opportunity much more seriously.

GROWTH IN RENEWABLE ELECTRICITY IN SCOTLAND

Trend of renewable electricity share in gross final energy consumption
2007 - 2017



Source: Fraser of Allander Institute

KEY FACTS: MOST RECENT RENEWABLE GENERATION ACTIVITY IN SCOTLAND

Quarter 1 2019 was a record quarter for Scottish renewable electricity generation, with 8,877GWh of renewable electricity generated, almost 1,300GWh up on Q1 2018

Scotland's net electricity exports is at its highest since Q4 2017, with a net 4,543GWh exported

Capacity rose from 10.4GW in March 2018 to 11.3GW in March 2019. A further 12.9GW of capacity is in the pipeline

Claire Mack, Scottish Renewables

The Scottish renewable energy sector is in the midst of transition: last year we were able to meet the equivalent of almost three quarters of our electricity demand from renewable sources, and that figure must rise into the 2020s as we seek to meet some of the world's most stretching climate change targets. The next stage is to significantly ramp up the decarbonisation of our heat and transport systems.

Onshore wind is the cheapest new energy technology of any type, with incredible prices achieved by projects in the latest UK Government clean power auctions in September.

Offshore wind has seen strong cost reductions and good levels of investment into multi-billion pound projects in recent years, showing that Scotland is starting to tap one of the best offshore wind resources in Europe. The CfD regime is supporting that, buoying investor confidence.

Balancing the supply and demand of energy with storage or flexibility services like Active Network Management and demand side response remains absolutely critical to the future development of the renewable energy market.

At Government level, the declaration that decarbonisation is now a climate emergency, coupled with the 2045 net-zero target for Scotland – five years earlier than the rest of the UK – has given our industry new impetus and certainty around which to focus future planning. The UN's 26th climate change conference is set to take place in Glasgow in 2020, further establishing Scotland as one of the most climate-savvy countries in the world.

The Scottish Government's continued commitment to the decarbonisation of our energy system is now making meaningful shifts towards heat and transport – both sectors which require intensive intervention if we are to meet those challenging climate change targets.

Also welcome is Holyrood's determination on wave and tidal energy – sectors in which this small country currently leads the world. There is much to gain from the development of both in the waters off our coasts, but a lack of support from Westminster is a barrier we're constantly working to overcome.

Balancing the supply and demand of energy with storage or flexibility services like Active Network Management and demand side response remains absolutely critical to the future development of the renewable energy market. The future of the grid is being rigorously consulted on with Ofgem currently; grid transmission costs are also contentious, while we have seen some indications of innovation on responsive charging to and from the grid by electric vehicles.

Scotland has a phenomenal level and scale of resource in renewables; even with the considerable cost challenges that exist. We have the skills, expertise and experience, particularly in planning and consenting, to make the transition to net zero possible. The technology and the will is there; how they are deployed is critical in this next phase of our journey to net zero.

Andrew Coull, Gneiss Energy

As renewable energy projects mature and develop a stable operating history, investment into the sector has shifted from early stage venture capital to pension and infrastructure funds seeking stable long-term yield.

The dominant theme within the sector now is the energy transition and we see this happening in numerous ways.

Renewables developers themselves are now looking further afield to other jurisdictions to develop new projects, in essence exporting Scotland's expertise in renewables to continue their own growth strategies.

Companies from all sectors are now looking to renewable energy to reduce their carbon footprint and improve operating efficiency. In oil and gas, where Gneiss Energy has a specific focus, we are working with clients to evaluate options for building renewable energy generation and energy efficiency measures into their existing operations both onshore and offshore.

Services companies are also now seeking to redeploy skills honed in the oil and gas industry to support offshore wind developments both through construction and operations and maintenance services. Renewables developers themselves are now looking further afield to other jurisdictions to develop new projects, in essence exporting Scotland's expertise in renewables to continue their own growth strategies.

Challenges for the sector remain. Domestically, the transition from subsidised to subsidy-free projects requires a shift in business models throughout the supply chain and the acceptance of a different risk profile for investors. Subsidy-free projects are beginning to emerge in wind and solar, though these tend to be larger to make them economically viable and attractive for the large investors now driving the market. Further developments in the UK market for Power Purchase Agreements (PPAs) and increased clarity around support mechanisms for energy storage solutions will both help to sustain this shift.

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