CHAPTER 2: NEED FOR THE PROJECT

INTRODUCTION

2.1. This chapter of the EIA Report presents a summary of the need for renewable energy development such as the optimised Seagreen Project, and the main energy, climate change and sustainability policy objectives and targets, which are currently shaping the offshore wind energy industry in Scotland and internationally.

2.2. This chapter covers the following four topic areas which summarise the need for offshore wind and the optimised Seagreen Project:

- Climate change;
- New energy infrastructure;
- Security of energy supply; and
- Economic benefits.

2.3. This chapter will present a summary of the relevant information from the 2012 Offshore ES, but focusses upon updates and developments in the four main policy areas.

CLIMATE CHANGE

2.4. Climate change and the need to reduce carbon emissions underpins the need to move towards low carbon energy production. The main international policies towards tackling climate change are presented in Table 2.1 and the main national policies presented in Table 2.2.

2.5. The Kyoto Protocol is a framework which sets mandatory targets for signatory nations aimed at reducing greenhouse gas emissions. The Paris Agreement was signed in 2016, and builds upon the Kyoto Protocol targets, providing a framework to keep global warming below 2°C, and to pursue efforts to limit the temperature increase to 1.5°C. The process of converting the Paris Agreement into actions that can be delivered has been set a deadline of 2018. EU countries have agreed a new framework for climate and energy, including EU-wide targets and policy objectives for the period 2020 to 2030.

2.6. The Renewables Directive 2009 (2009/28/EC) establishes overall policy for the production and promotion of energy from renewable sources in the EU. Under the Directive, each country has produced a Renewable Energy Action Plan, which explains how that country will meet its 2020 target. The National Renewable Energy Action Plan (NREAP) for the UK explains how the UKs target will be met, outlines the UK renewables policy frameworks and demonstrates how delivery will be coordinated.

2.7. The Climate Change (Scotland) Act 2009 sets a legally binding commitment to cut Scotland's carbon emissions by 80% from 1990 levels by 2050. The Climate Change (Scotland) 2009 Act also requires that annual targets are set periodically for 2010 to 2050 and a report setting out policies and proposals for meeting the targets must be published by the Scottish Government. In February 2018, Scotland finalised its third Climate Change Plan, setting out proposals and policies to lower emissions by 66% by 2032 (Scottish Government, 2018). Previous climate change plans relate to earlier targets set, in order to meet the commitments under the Climate Change (Scotland) Act 2009. The Climate Change Plan sits alongside the Scottish Energy Strategy (2017), and provides the strategic framework for the transition to a low carbon Scotland. The Scottish Government intends to introduce a new Climate Change Bill, which will set even more ambitious targets for the reduction of greenhouse gas emissions, to meet obligations under the Paris Agreement.

Table 2.1 Key international policies that outline the commitment to reducing emissions and tackling climate change

Policy	Summary
International Policy	
Kyoto protocol	The Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997) was ratified by the UK in 2002. This framework set mandatory targets aimed at reducing greenhouse gas emissions. First commitment period: The UK's commitment is for a reduction in greenhouse gas emissions of 12.5% from base year (1990) levels by 2008 to 2012 under the EU burden sharing agreement (EU Decision 2002/358/EC). Second commitment period (Doha Amendment): This bridges the gap between the first period and the new global agreement (Paris Agreement). EU countries have agreed to a 20% reduction target, implemented through the 2020 climate change & energy package. The UK communicated an independent quantified economy-wide emission reduction target of a 20% emission reduction by 2020 compared with 1990 levels (base year).
The United Nations Framework Convention on Climate Change Paris Agreement	The Paris Agreement (2016) sets out a global action plan towards climate neutrality and stop in increase in global average temperatures to below 2˚C above pre-industrial levels and to pursue efforts to limit warming to 1.5˚C.
European Policy	
2020 Targets	In 2008, the EU agreed a Climate and Energy Package known as the 20-20-20 targets. The targets included: • A reduction in EU Green House Gas emissions by at least 20% from base levels; • 20% of EU energy consumption to be obtained from renewable energy sources; and • A 20% reduction in primary energy use.
EU Renewables Energy Directive 2009/28/EC	In order to meet the 2020 Targets, the Renewable Energy Directive was implemented outlining rules for the EU to achieve its 20% renewables target by 2020. The UK set a target of 15% of the energy consumed in the UK to come from renewable sources by 2020.
2030 Energy Strategy	In 2014, EU Countries agreed on a new framework for climate and energy, which includes EU-wide targets and policy objectives for 2020-2030. The targets include: • A 40% cut in greenhouse gas emissions compared to 1990 levels; • At least a 27% share of renewable energy consumption; and • At least 27% energy savings compared with the business as usual scenario. To meet the targets the European Commission has proposed: • A reformed EU emissions trading scheme (ETS); • New indicators for the competitiveness and security of the energy system; and • First ideas for a new governance system based on national plans for competitive, secure and sustainable energy.

Table 2.2 Key national policies that outline the UK and Scotland's commitment to reducing emissions and combatting climate change

Policy	Summary
UK Policies	
The Climate Change Act 2008	The Climate Change Act 2008 commits the UK to reducing greenhouse gas emissions by at least 80% against the 1990 baseline by 2050. The Act requires the government to set legally-binding carbon budgets (limits on emissions), which must be set at least 12 years in advance. The first five budgets have been legislated and run up to 2032. The Act also established the Committee on Climate Change (CCC) to ensure that emissions targets are evidence-based and independently assessed.
The Energy Act 2013	The Energy Act received Royal Assent on 18 December 2013. The Act established a legislative framework for delivering secure, affordable and low carbon energy and includes provisions on: decarbonisation, Electricity Market Reform (EMR), nuclear regulation, government pipe-line and storage system, strategy and policy statement and consumer protection.
Scottish Policies	
The Climate Change (Scotland) Act 2009	The Climate Change (Scotland) Act 2009 sets an interim 42% reduction target for 2020, and an 80% reduction target for 2050. The Act requires that the Scottish Ministers set annual targets, in secondary legislation, for Scottish emissions from 2010 to 2050 following consultation with advisory bodies.
The Scottish Energy Strategy (2017)	The Scottish Energy Strategy sets out the Scottish Government's vision for the future energy system in Scotland. It articulates six energy priorities that considers both the use and the supply of energy for heat, power and transport.
Electricity Generation Policy Statement (EGPS) (2013)	Considers the changes necessary to meet domestic targets, from a variety of electricity generation sources and the technology and infrastructural advances required to 2023 and beyond.
2020 Routemap for Renewable Energy	Sets out a framework for action on renewable energy. Identifies a programme of actions to achieve national targets and objectives, and proposes tougher 2020 targets.
Low Carbon Economic Strategy, 2010	Sets out a number of indicators to demonstrate the impact of the move to a low carbon economy.
National Planning Framework 3, 2014	The third National Planning Framework sets out the long term vision for the development of Scotland and is the spatial expression of the Scottish Government's Economic Strategy. The focus is upon sustainable economic growth and the transition to a low carbon economy.

NEW ENERGY INFRASTRUCTURE

2.8. The Overarching National Policy Statement (EN-1) (DECC, 2011) sets out the need for new energy infrastructure in the UK over the next 40 years, focusing particularly on the 13 years, up to 2025. It considers that 59 Gigawatt (GW) of new build electricity generation capacity is required in that period, of which 33GW should be from renewables. This requirement is "in order to secure energy supplies that enable us to meet our obligations for 2050" (DECC, 2011).

2.9. The Renewables Action Plan (RAP) published by the Scottish Government in June 2009 set out priorities and actions for the development of the Scottish renewable energy sector, to ensure that the broad target of producing 20% of energy from renewable sources by 2020 was met (Scottish Government, 2009). The RAP was superseded by the 2020 Routemap for

Renewable Energy in Scotland to reflect the updated target of an equivalent of 100% demand for electricity from renewable energy by 2020, as well as 11% renewable heat. The 2020 Routemap for Renewable Energy in Scotland was most recently updated in 2015, highlighting that offshore wind is showing increasing promise as a source of renewable energy, and huge economic value (Scottish Government, 2015).

2.10. The Electricity Generation Policy Statement (EGPS) examines the way in which Scotland generates electricity, and considers the changes which will be necessary to meet the targets that the Scottish Government has established (Scottish Government, 2013). The EGPS highlights the importance of renewables in light of the Scottish Government's target of delivering the equivalent of at least 100% gross electricity consumption from renewables by 2020 as part of a wider, balanced electricity mix. The Scottish Government's policy on electricity generation is that Scotland's generation mix should deliver:

- A secure source of electricity supply;
- At an affordable cost to consumers;
- Which can be largely decarbonised by 2030; and
- Which achieves the greatest possible economic benefit and competitive advantage for Scotland including opportunities for community ownership and community benefits.

2.11. The EGPS states that in order to meet the ambitious targets set by the Scottish Government, "a sustained annual renewable deployment rate of more than twice that ever experienced in Scotland is required, and thus will depend upon investment in and installation of large-scale schemes. Especially offshore wind". The growth rate of renewables is highlighted as a challenge but is consistent with trajectories proposed within the 2020 Renewables Routemap and Blues Seas Green Energy report (Marine Scotland, 2011).

2.12. In 2014, the third National Planning Framework was published setting out the long term vision for the development of Scotland and expressing spatially the Scottish Government's Economic Strategy (Scottish Government, 2014). The focus was upon sustainable economic growth and the transition to a low carbon economy.

2.13. In 2017 the Scottish Energy Strategy was published, setting out the Scottish Government's vision for the future energy system in Scotland (Scottish Government, 2017). The strategy outlines six priorities around Scotland's 2050 vision, which includes renewable and low carbon energy solutions. The strategy set targets of the equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources; and an increase by 30% in the productivity of energy use across the Scottish economy, to be completed by 2030.

ENERGY SECURITY

2.14. Energy consumers need to have access to a reliable, secure and affordable energy supply. Production from gas and oil from UK's own reserves has been in decline since 1999 and without action the UK will become ever more reliant on imported energy sources with greater exposure to global energy price fluctuations (Offshore ES [DECC, 2009]; DECC, 2014).

2.15. In 2009, the UK Government released the Low Carbon Transition Plan White Paper which plots how the UK will meet the 34% cut in emissions on 1990 levels by 2020 (DECC, 2009). In 2011 the UK Government released The Carbon Plan: Delivering our Low Carbon Future, which stated that renewable electricity must rise to 30% of generation by 2020, and that by 2030 renewable electricity could provide 35-50GW (UK Government, 2011). The Low Carbon Scotland Plan: Meeting reduction targets 2013 to 2027 also stated that renewable

energy will enhance Scotland's energy security by broadening the current generation sources, which has the benefit of minimising consumer reliance on volatile fossil fuels and obvious economic benefits (Scottish Government, 2013).

2.16. The UK needs to secure large scale, low carbon sources of energy, and the development of offshore wind electricity will improve energy security, through low carbon means. This remains a priority for the UK Government and the Scottish Government, and the optimised Seagreen Project can provide a significant contribution to securing a low carbon home grown energy supply.

ECONOMIC BENEFIT

2.17. The UK Government's Renewable Energy Roadmap sets out a comprehensive action plan to accelerate the UK's deployment and use of renewable energy, to put the UK on a path to achieve the 2020 target, while driving down the cost of renewable energy over time. It also identifies that the required growth in the renewables industry to achieve targets could more than double the number of jobs, to over half a million working in the UK renewable sector by 2020. In 2013, the Renewable Energy Roadmap was updated to reflect the progress and changes that have occurred within the sector (UK Government, 2013).

2.18. Renewable energy continues to create investment opportunities and jobs throughout the supply chain. The Scottish Government estimates that renewable energy could deliver up to £30 billion investment and 40,000 jobs by 2020 (Audit Scotland, 2015). The UK low carbon economy has the potential to grow by approximately 11% per year between 2015 to 2030 and deliver between £60 billion to £170 billion of export sales of goods and services (UK Government, 2017). Turnover for the Scottish low carbon and renewable energy economy increased by 7.1% from 2015 to 2016 (Office for National Statistics, 2018). The number of employees working directly in the low carbon and renewable energy economy in the UK grew by 3.3% to 208,000 full-time equivalents (FTE) in 2016, from 201,500 in 2015, and with Scotland specifically the number of employees increased from 22,000 to 24,000 (Office for National Statistics, 2018).

2.19. The energy sector in the UK plays a central role in the economy and renewable energy can play a major role in boosting the economy. The development of home grown renewable energy can help the UK to avoid paying to import energy (RenewableUK, 2018).

2.20. The Offshore Wind Industry Group (OWIG) was established in 2009 to ensure that Scotland maximises the opportunity for sustainable economic growth through offshore wind. The Offshore Wind Route Map is the culmination of the work undertaken by OWIG, setting out the opportunities, challenges and the priority recommendations for action for the sector to realise Scotland's full potential in offshore wind. The latest review of the offshore Wind Route Map was in 2013 which analysed the progress that has been made in line with the original recommendations in relation to updated targets, such as an equivalent of 100% demand for electricity from renewables (Offshore Wind Industry Group, 2013).

2.21. In 2014, six significant OWF projects were approved by the Scottish Government, with the potential to create between 6,000 – 18,000 jobs (Scottish Government, 2015). These were Seagreen Alpha and Seagreen Bravo OWFs, Neart na Gaoithe OWF and Inch Cape OWF in the outer Forth and Tay region, and the Beatrice OWF and MORL projects (Telford, Stevenson and MacColl OWFs) in the Moray Firth. Beatrice OWF is currently under construction and at £2.6 billion is one of the largest ever private infrastructure investments in Scotland. It has been estimated that the construction of the project could add approximately £1.13 billion of value to UK GDP, of which around £530 million would contribute to the Scottish economy (Beatrice OWF, 2017).

2.22. There are a number of financial funds based in Scotland or focusing on providing financial support for the Scottish renewable energy sector:

- The National Renewables Infrastructure Plan (N-RIP) is a strategic economic framework for developing Scotland's ports and harbours for the purpose of supporting offshore renewable energy industry needs. The N-RIP provides £70 million of funding for renewables.
- The Offshore Renewable Energy (ORE) Catapult is a £50 million technology innovation project funded by the Technology Strategy Board, located within Glasgow. It brings together innovative companies and key research institutions to support the development of pioneering low carbon technologies.
- The Renewable Energy Investment Fund (REIF) provides financial assistance (£100 million fund) for projects that deliver energy from a renewable source, reduce the cost of renewable energy or provide key solutions for renewable energy generation, whilst providing benefit to the economy of Scotland.
- Prototyping for Offshore Wind Energy Renewables Scotland (POWERS) provides financial support (£35 million fund available to manufacturers) for the capital and operational costs associated with prototype next generation offshore wind turbines.
- The Scottish Innovative Foundation Technologies (SIFT) is a designated £15 million fund to support the need for innovation in deep-water offshore wind foundation design and installation, in order to help drive down the cost of energy. The fund is available for projects that build their prototype in Scotland and commit to full scale production of next generation offshore wind foundations in Scotland.

OFFSHORE WIND IN SCOTLAND

2.23. Scotland is considered to have the best wind resource across Europe (onshore and offshore) and is the largest offshore renewable energy resource generally in the EU (an estimated 25% of Europe's tidal resource, 25% of its offshore wind resource and 10% of its wave potential), and is well placed to take a global lead in the exploitation of renewable energy sources at sea (SNH, 2010). The UK Government and the Scottish Government are committed to ensuring that an increased proportion of electricity is generated from wind power and other renewable energy sources.

2.24. There has been a significant increase in renewable electricity output in Scotland, which has more than doubled from 8,003.2 Gigawatt Hour (GWh) in 2007 to 19,657.5GWh in 2016 (Scottish Government, 2017c). Renewable electricity generation is now equivalent to approximately 54% of Scotland's electricity consumption. As of December 2017, Scotland has 10GW of installed renewable electricity generation capacity, with an additional 10.9GW of capacity either under construction or consented (Scottish Government, 2017c).

2.25. Scotland has become a hub for renewables sector research. Programmes such as the ORE Catapult, based in Glasgow, the Scottish Offshore Renewables Research Framework, and the Offshore Renewables Joint Industry Programme (ORJIP) for Offshore Wind and Ocean Energy, on which Marine Scotland play a leading role, provide research into technology and innovation, provide a mechanism for collaboration and encourage the development of the offshore renewable sector.

NEED FOR AND BENEFITS OF ROUND 3, THE ZONE AND THE OPTIMISED SEAGREEN PROJECT

2.26. In June 2008, The Crown Estate announced the Round 3 (R3) offshore wind leasing round, in anticipation of the successful conclusion of DECC's first Offshore Energy Strategic Environmental Assessment (OESEA) for the UK's Renewable Energy Zone (REZ) and the adoption of the offshore wind plan.

2.27. The development of the Round 3 offshore wind farm zones was required to meet the emission targets set by the Climate Change Act 2008 and meet government renewable energy and climate change policy objectives. Round 3 will also contribute significantly to the achievement of the UK's National Renewable Energy Action Plan (NREAP) (DECC, 2010).

2.28. Seagreen was awarded exclusive development rights in the Firth of Forth Round 3 Offshore Wind Zone (the "Zone") by The Crown Estate in 2010. In 2014, Scottish Ministers awarded consents and licences, for the construction and operation of the Seagreen Alpha and Seagreen Bravo offshore wind farms and the Offshore Transmission Asset (collectively the Seagreen Project). The optimised Seagreen Project is the first phase of the development of the Zone and the Applicants' contribution to meeting the Scottish Government policy on renewable energy and climate change policy. However, Seagreen is now applying for additional consents for an optimised wind farm design based on fewer, larger, higher capacity wind turbines that have become available since the 2014 consents decision. There are multiple benefits associated with the optimised Seagreen Project, including:

- The introduction of larger capacity wind turbine generators, which may result in a reduction in the number of WTGs overall;
- The production of over 1GW of renewable energy;
- Very low lifetime CO_2 emissions per unit of electricity generated;
- Address climate change through a move to a low-carbon generation mix for a secure energy future;
- Provide an indigenous source of clean energy;
- Contribution to new energy infrastructure; and
- Contribution to sustainable economic growth.

2.29. The optimised Seagreen Project, utilising larger, higher capacity WTGs that are becoming available, will contribute significantly to the new energy infrastructure that needs to be developed to replace existing generating capacity, to ensure security of supply and to assist in meeting targets for renewable energy generation. The optimised Seagreen Project will contribute to the growth of the decarbonised energy sector in Scotland. As stated previously, the Scottish Government has set out clear policy drivers that seek to maximise future economic opportunities presented by low carbon energy production.

2.30. The need for the optimised Seagreen Project is clearly driven by key climate change, energy infrastructure, energy security and economic development from energy, at International, European, UK and National levels. The key environmental benefit of the optimised Seagreen Project is the generation of electricity from a renewable energy source that will reduce or avoid the use of fossil fuels in combustion power plants.

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