

Internationalisation

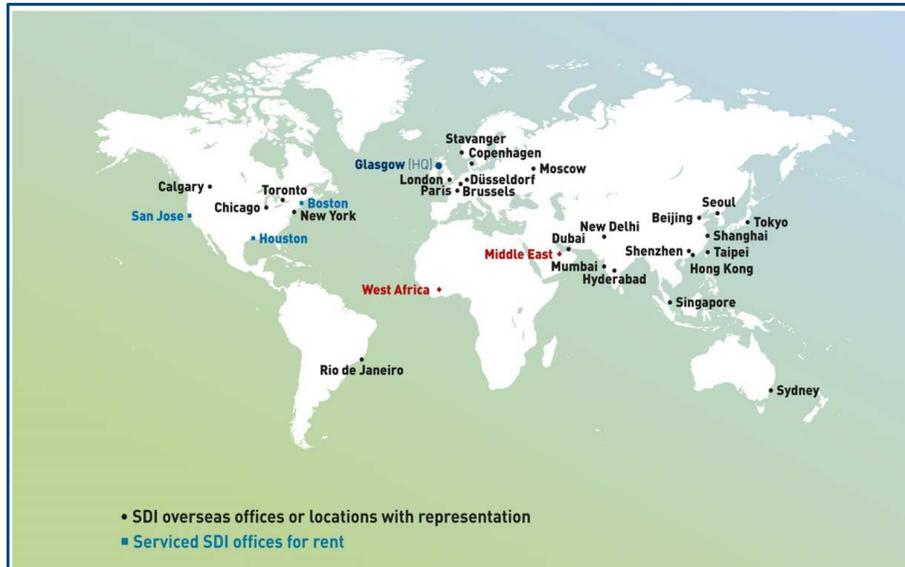
Suzy O'Hare

Scottish Development International
Role

The Role of SDI

Scottish Development International (SDI) is the specialist inward investment and trade arm of Scottish Enterprise and Highlands & Islands Enterprise

- We are a single point of contact for all international business development needs
- We promote Scotland overseas as a business location
- We also assist Scottish based companies to access international markets



Global Presence – 20 Countries

- Asia Pacific
- Europe, Middle East & Africa
- North America
- 40 offices in key locations such as Paris, Dusseldorf, Dubai, Tokyo, Shanghai, Seoul, Mumbai, Boston, San Jose, Houston, Calgary, and Rio de Janeiro

EMEA - Place, People and Sector Priorities



Sector Key	
Education	
Oil and Gas	
Renewables	
Financial & Business Services	
Food & Drink	
Technology and Adv. Engineering	
Life & Chemical Sciences	
Tourism	
Textiles	
Cross sector activity	
Office location	

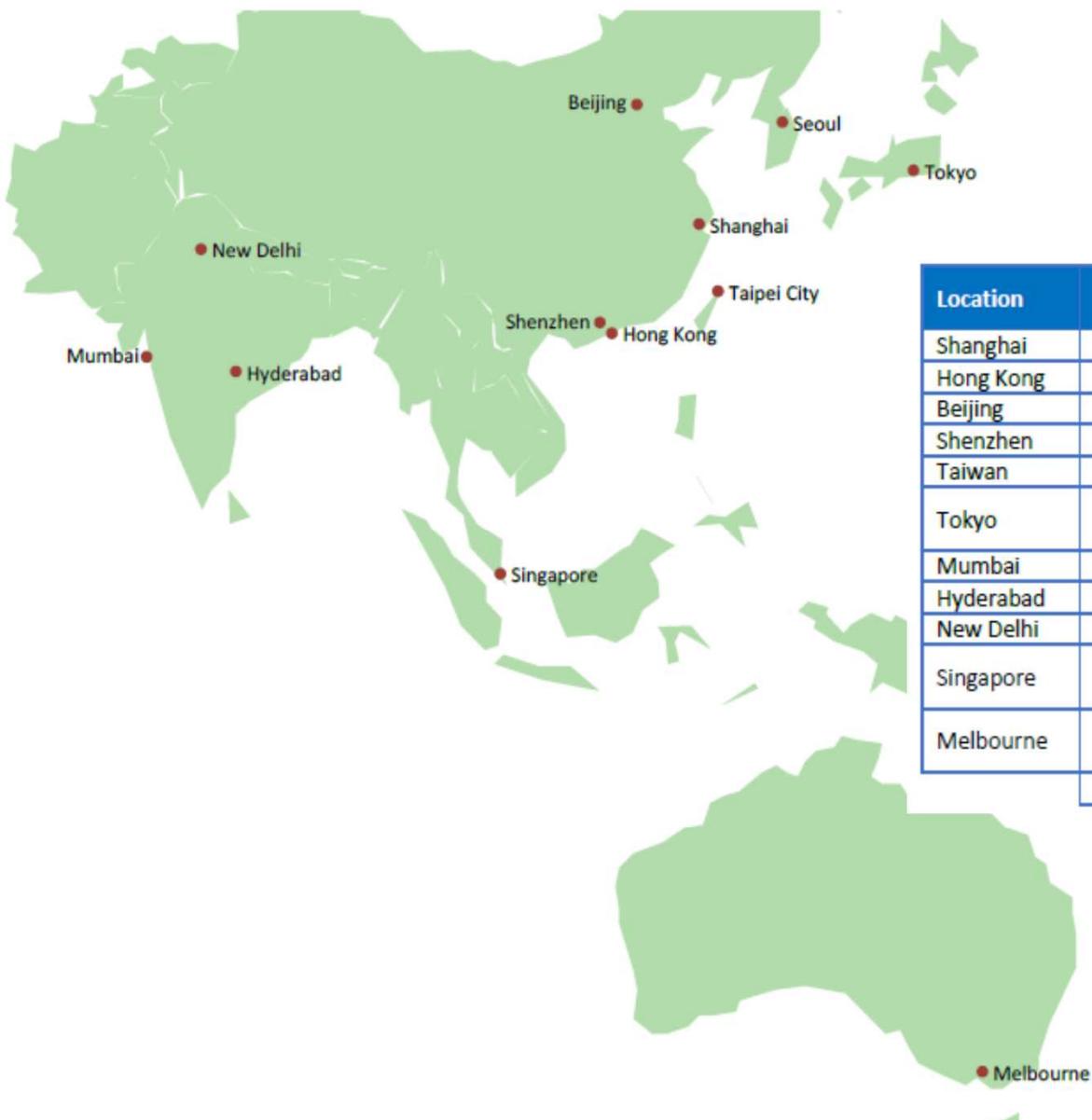
Location	Staff	Trade focus	Investment focus
Paris	11		
Dusseldorf	10		
London	10		
Dubai	6		
Copenhagen	4		
Accra	2		
Bern	2		
Brussels	2		
Al Khobar	1		
Barcelona	1		
Berlin	1		
Dublin	1		
The Hague	1		
Madrid	1		
Milan	1		
Stavanger	1		
	55		

Annex 2: Americas - Place, People and Sector Priorities



Location	Staff	Trade focus	Investment focus
Boston/ East Coast/ New York City	15		
Toronto	8		
Houston	5		
San Jose	5		
Chicago	4		
Rio De Janeiro	2		
Calgary	1		
	40		

Annex 3: Asia - Place, People and Sector Priorities



Location	Staff	Trade focus	Investment focus
Shanghai	5		
Hong Kong	4		
Beijing	3		
Shenzhen	1		
Taiwan	1		
Tokyo	9		
Mumbai	3		
Hyderabad	2		
New Delhi	2		
Singapore	5		
Melbourne	2		
	37		

Internationalisation

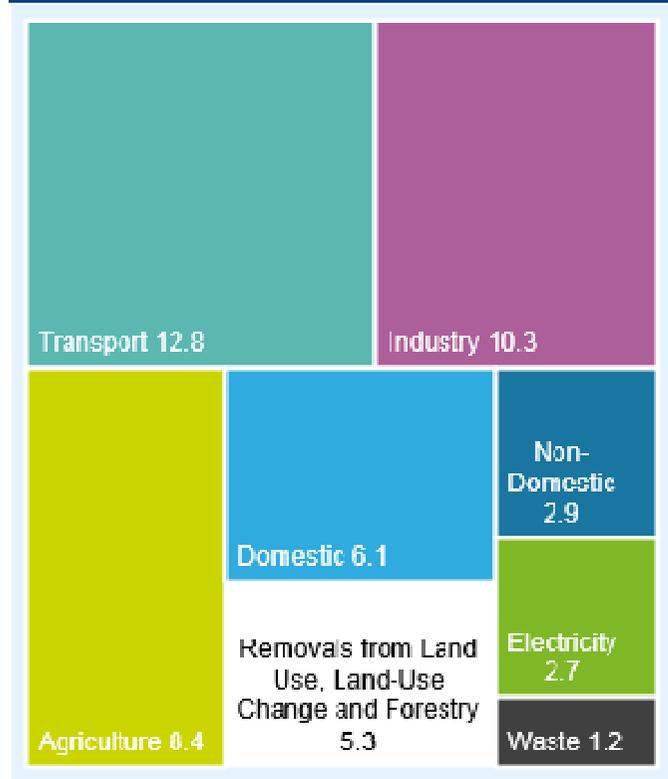


Investment Incentives	Grants	Tax Incentives
Regional Selective Assistance Equity Funding	R&D Grant Additional Innovation Grants	Tax Credits Patent box - pay up to 56 % less corp. tax

Scotland's Climate Change Plan

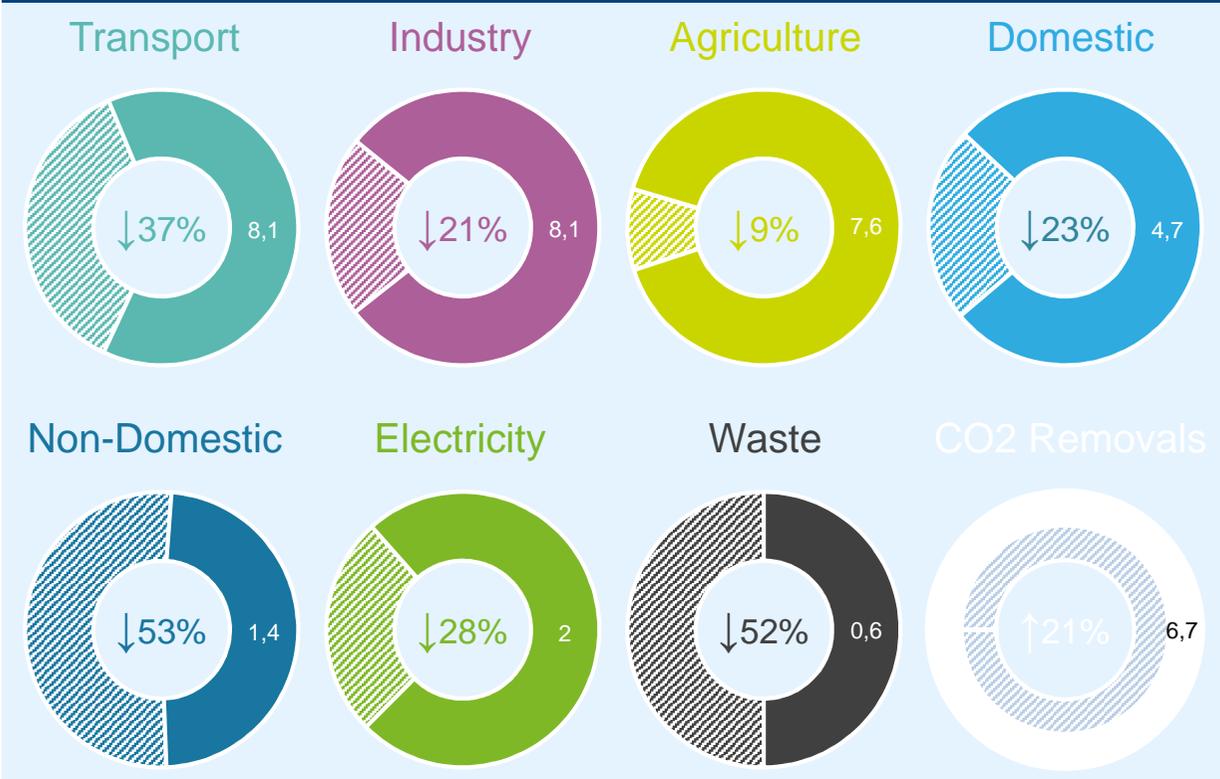
The Climate Change Plan sets out the Scottish Government's policies and proposals for achieving a 66% reduction in Scotland's CO2 emissions, from 1990 levels, by 2032. It covers a 15yr period (2018-32) and includes emission targets for 8 sectors:

Total Net Emissions in 2018 = 39.1 MtCO2e



*Domestic and Non-Domestic buildings

Target for Total Net Emissions in 2032 = 25.8 MtCO2e



Plan seeks a 34% reduction in Scotland's total net emissions between 2018-32

Scotland's Climate Change Plan

The Plan sets out a vision for “*enormous transformational change*” achieved in collaboration with the public, private and third sectors, as well as individuals and communities throughout Scotland:

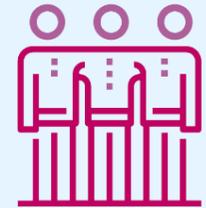
The Public Sector

Scotland's public bodies will lead by example in combatting climate, influencing and enabling positive action and serving as an exemplar of low carbon innovation.



The Role of Communities

The Climate Challenge Fund will support communities across Scotland to run projects that reduce emissions and aid adaptation to the impacts of a changing climate.



The Planning System

The planning system must provide the framework in which decisions about “place” (e.g. buildings, streets, spaces) support low carbon lifestyles and transformative change.



Behavioral Change

Public engagement is essential for helping people across the country understand the changes we need to make as a society, ensuring that everyone is willing and able to take the actions required for low carbon living.



Scotland's Climate Change Plan

The Plan seeks to provide certainty to businesses to help them “seize the economic opportunities offered by the transition to low carbon technologies, products and services”, and includes targets and policies in support of the low carbon sector:

BY 2032 – SCOTLAND'S ELECTRICITY SYSTEM WILL BE LARGELY FROM RENEWABLE SOURCES INCLUDING ONSHORE WIND, OFFSHORE WIND, HYDRO, SOLAR, MARINE AND BIOENERGY



30% INCREASE IN LOW EMISSION FERRIES FLEET

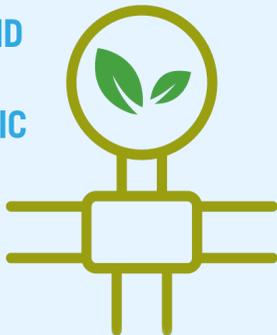
ELECTRIFY 35% OF RAIL NETWORK

BY 2032, PHASE OUT THE NEED TO BUY PETROL AND DIESEL CARS OR VANS



LOW CARBON TECHNOLOGIES WILL SUPPLY HEAT TO:

35% OF DOMESTIC AND 70% OF NON-DOMESTIC BUILDINGS



15% REDUCTION IN DOMESTIC HEAT DEMAND

20% REDUCTION IN NON-DOMESTIC HEAT DEMAND

CCS, CCUS AND HYDROGEN



TECHNOLOGY CRITICAL TO FURTHER EMISSIONS REDUCTION WILL BE DEMONSTRATED AT COMMERCIAL SCALE BY 2030

Development of the Scottish Energy Strategy

Published on 20/12/2017, the *Scottish Energy Strategy* is the Scottish Government's first strategy covering the whole energy sector. SE has played an integral role in the development of the document since its inception in March 2016, providing:

Market Insights

In the form of SE foresighting, research and intelligence — from both a company and international perspective — to inform the development of the strategy.

Feedback

Our response to the draft strategy consultation stressed the importance of interim milestones, master planning and the vital role of the oil & gas sector in the energy transition.

Content

SE arranged a workshop with the Scottish Government to discuss the key economic opportunities of energy, and also drafted content for Economic Opportunity chapter.



We're continuing to work with the Scottish Government to support the vision and priorities set out in the strategy, and to realising the opportunities outlined within it.

Vision of the Scottish Energy Strategy

The Strategy sets out a vision to 2050 for a “flourishing, competitive local and national energy sector, delivering secure, affordable, clean energy for Scotland’s households, communities and businesses” that is guided by three core principles:

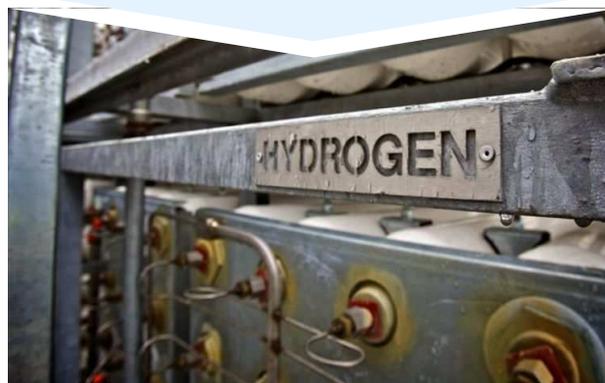
An Inclusive Energy Transition

Promoting a transition that helps to tackle inequality and poverty, stimulating a fair and inclusive jobs market that creates opportunities across the country.



A Whole-System View

Taking an integrated approach to approach to heat, transport, electricity and energy efficiency that recognises the effect each element of the system has on the others.



A Smarter Local Energy Model

Supporting a smarter, more coordinated approach to planning and meeting local energy needs that links to developments at a national level.



Priorities of the Scottish Energy Strategy

In addition to the long-term vision, the strategy also sets out six near-term priorities focussed on maximising opportunities for Scotland as it prepares to take the major long-term decisions that will determine the shape of its future energy system:

Consumer Engagement & Protection

Working to protect consumers from excessive or avoidable costs, and promote the benefits of smarter domestic energy systems.



Energy Efficiency

Taking direct and supporting actions to improve the use and management of energy in Scotland's homes, buildings, industrial processes and manufacturing.



System Security & Flexibility

Ensuring Scotland has the capacity, connections, flexibility and resilience to maintain secure and reliable supplies of energy throughout the transition.



Innovative Local Energy Systems

Empowering communities by supporting the development of innovative and integrated local energy systems and networks.



Renewable & Low Carbon Solutions

Championing the potential of Scotland's huge renewable energy resource to meet our heat, transport and electricity needs, and realise our emissions reduction targets.



Oil & Gas Industry Strengths

Supporting investment, innovation and diversification across O&G, working with industry to advance key priorities and prepare for a positive role in the future energy system.



Contribution of Energy to the Scottish Economy

Renewables & LCT Sector



£910m

Capital investment
in renewable
power in 2015

£10.5bn

Turnover by sector
and supply chain
in 2015

58,500

Sector and supply
chain jobs in 2015

20,000

companies active
in the sector in
2015

£224.5m

Exports in 2015



All Energy



£45.7bn

Turnover in 2015

£16.4bn

GVA in 2015

£15.9bn

Exports in 2015

Oil & Gas Sector



£9.8bn

Value for the
Scottish economy
in 2015

2000+

Scottish supply
chain companies

£8bn

Capital investment
in 2016/17

115,000

Scottish supply
chain jobs in 2017

£11.4bn
international
supply chain sales
in 2014



Realising the Economic Opportunity

The Energy Strategy sets out a series of eight priorities for the Scottish Enterprise agencies (SE, HIE, SDS, etc) that will help the country to realise the economic opportunities of the energy system transition:

Stimulating Investment

Including building on the success of REIF and LCITP via successor funds

Supporting Research & Innovation

Capitalising of world class facilities, continuing support for ETP and supporting R&D within business

Creating New Business Models

Capitalising on new digital technologies and circular economy opportunities

Developing Necessary Skills

Working collaboratively to anticipate future skills requirements

Strengthening Supply Chains

Capitalising on key strengths and continuing engagement with developers

Supporting Internationalisation

Exploiting Scotland's leadership position in key areas

Cultivating Regional Partnerships

Using Regional Economic Partnerships to align national and local priorities

Boosting Inclusive Growth

Focussing on energy efficiency and consumer engagement and protection

Existing Strengths – Opportunities for Scotland

Oil & Gas



Oil & Gas
Decommissioning



Onshore
Wind



Nuclear
Decommissioning



Marine
Energy



Offshore
Wind



Strength – Oil & Gas



Company Capabilities

- Development wells
- Platform structures
- Subsea systems
- Pipelines
- Floating production systems
- Project Management

Areas of Expertise

- Subsea engineering
- Pioneering downhole technology
- Cutting edge research capability
- Industry leading education and training
- Health & safety

Key Assets

- Aberdeen – a global investment hub
- National Subsea Research Institute
- O&G Innovation Centre
- O&G Technology Centre
- Grangemouth

Strength – Oil & Gas Decommissioning



Scottish Strengths

- Scottish O&G supply chain has excelled in delivering engineering / technology solutions for over 50 years. Decomm capabilities across a range activities, including:
 - Project Management
 - Technical / Engineering / Environmental / Site Studies
 - Well Plugging & Abandonment
 - Facilities Running (temporary utilities)
 - Cleaning / Waste Management
 - Topsides Preparation / Removal
 - Subsea Preparation / Removal
 - Pipelines / Risers / Flexibles
 - Port Infrastructure / Onshore Recycling & Reuse
 - Vessels / Logistics
 - Site Remediation / Monitoring

Key Projects & Opportunities

- Over 100 Scottish supply chain companies involved in Shell's Brent Field decommissioning in 2016.
- Over 30 decommissioning projects in planning or execution with 79 forecast over next ten years.
- Operators indicate UK supply chain companies will deliver more than 80% of decommissioning activity.
- Scottish GVA estimated at between £8.3 billion and £11.3 billion over the next decade.
- UKCS 2nd most advanced market globally behind GoM. £17.6 billion spend forecast 2015-2025; £47 billion to 2040.

Strength – Nuclear Decommissioning



Scottish Strengths

- Over 50 Scottish companies in nuclear decommissioning supply chain
- Particular expertise with difficult nuclear sites stemming from the complexity of the Dounreay Fast Reactor decommissioning.
- Scottish supply chain has key strengths in metal fabrication, safety case engineering, as well as delivering innovation decommissioning solutions.

Key Projects & Opportunities

- Current decommissioning sites in Scotland: Dounreay, Chapelcross and Hunterston A.
- Hunterston B from 2023 and Torness from 2030.
- UK civil nuclear decommissioning budget- £3bn per annum
- Globally over 400 civil nuclear reactors due for decommissioning over next few decades - cost of approximately £1bn each.

Strength – Offshore Wind



Company Capabilities

- Project development
- Surveying & consenting
- Foundation fabrication
- Substation fabrication
- Subsea grouting
- Seabed preparation
- Cable installation

Academic Capabilities

- Control System design
- Blade Technology
- Generator Design and Power Electronics
- Wind Modelling and Resource Assessment
- Turbine Foundations

Key Facilities & Projects

- Hunterston Test Centre
- Levenmouth Test Turbine
- ORE Catapult
- EOWDC
- Beatrice
- Hywind Scotland

Strength – Tidal

INNOVATION™
Nova Innovation Ltd

Nautricity



Company Capabilities

- Testing
- Surveying & consenting requirements
- Device & project design
- Device and cable installation
- Composites
- Fabrication

Academic Capabilities

- Tank testing
- Resource assessment
- Machine design
- Economic modelling & assessment
- Environmental impact modelling
- CPD

Key Facilities & Projects

- EMEC
- FloWave TT
- MeyGen – the world's first large scale array
- Shetland Tidal Array – world's first community scale array

Strength – Wave



University of the
Highlands and Islands
Oilthigh na Gàidhealtachd
agus nan Eilean



Company Capabilities

- Testing
- Surveying & consenting requirements
- Device & project design
- Device and cable installation
- Composites
- Fabrication

Academic Capabilities

- Tank testing
- Resource assessment
- Machine design
- Economic modelling & assessment
- Environmental impact modelling
- CPD

Key Facilities & Projects

- EMEC
- FloWave TT
- Wave Energy Scotland
- Isle of Muck – Marine Harvest

Strength – Onshore Wind



Scottish Strengths

- An estimated 7,500 people are employed by the Scottish onshore wind industry, which generated more than £3 billion in turnover in 2015.
- Scotland has particular strengths in project development, civil engineering and O&M services.
- Scotland is home to the UK's only wind turbine tower fabrication facility – CS Wind in Campeltown
- Siemens has as an onshore wind project support hub in Livingston and Vestas, Senvion, Enercon all have offices in Scotland.

Key Projects & Opportunities

- Over 700MW of Scottish remote island wind projects eligible to bid in CfD auction round 3 in 2019.
- EDF acquired 600MW Scottish project pipeline in July 17.
- Statkraft announced in October 17 that it is seeking 300MW project pipeline in Scotland.
- Community Windpower, EDF, Muirhall and RES are considering post-subsidy projects in Scotland.
- Repowering forecast to become significant market from 2024 onwards as commercial-scale wind farms begin to reach their end of life.

Emerging Opportunities & Areas for Analysis

Circular
Carbon

Smart Local
Energy Systems

Energy
Efficiency

Low Carbon
Transport

Digital
Energy

Hydrogen

Oil & Gas as an
enabler of the
energy transition

Emerging Opportunity – Smart Local Energy Systems



Key Opportunities

- The Scottish Energy Strategy has created global interest and furthers Scotland's reputation as a leader in low carbon energy.
- There is an opportunity to establish Scotland as the place in the world where advanced, smart 'whole' local energy system solutions are developed and deployed.
- Global spend on ES technologies could cumulatively amount to £118bn by 2020 with about half of this occurring in Europe.

Emerging Opportunity – Low Carbon Transport



Key Opportunities

- The Scottish Government have set a target to phase out the need for new petrol and diesel cars and vans by 2032.
- There is an opportunity to maximise Scottish content in the UK vehicle supply chain, which manufacturers 1.8m vehicles and 2.5 million engines per annum.
- Scotland also has capabilities in vehicle retrofit, biofuel manufacturing, refuelling infrastructure, charge point installation, grid services, and mobility services.



Emerging Opportunity – Low Carbon Heat



Key Opportunities

- More than half (51%) of the energy consumed in Scotland is used to heat homes and businesses, with the majority of systems fuelled by natural gas.
- LCITP has been an important mechanism for stimulating investment in innovative solutions to decarbonising heat as part of an integrated approach to meeting local energy requirements.
- Low carbon heat is a key component of SEEP, which seeks to transform energy efficiency and heating of Scotland's buildings.



Emerging Opportunity – Hydrogen



Key Opportunities

- Scotland appears particularly well placed to pursue the development of fuel cell buses and ferries.
- Fuel cells used for backup or prime power, particularly in remote areas.
- Ammonia production from green hydrogen could be a further area of benefit to Scotland.
- Building and connecting H2 fuelling stations to Scotland's wind generation could allow a cost-effective integrated system to be developed, creating local markets and jobs.

Emerging Opportunity – Circular Carbon



Scottish Capabilities

- **Company base** – Scotland's chemical industry is investigating the manufacturing opportunity arising from the capture of CO₂. Scotland's long history in the oil and gas industry has created much of the infrastructure and supply chain strengths to support the emergence of CCS and hydrogen production.
- **Academia** – Scottish Carbon Capture & Storage (SCCS) at Edinburgh University are internationally respected for their work. In addition there are innovative technologies at Aberdeen University in CO₂ utilisation and St Andrew's in green hydrogen production.



Key Opportunities

- **Acorn Project** - a small-scale full-value chain CCS project based at the gas processing plant at St Fergus near Peterhead. This project has secured European funding as well as funding from Scottish Government.
- **North Sea CO₂ storage** - Scottish North Sea has some of most well understood storage sites in Europe. Could be strategically important CO₂ storage asset for rest of Europe due to its significant capacity.
- **Grangemouth** - Ineos have received European funding to study hydrogen production and CCUS at their petrochemical site.

Emerging Opportunity – Oil & Gas Diversification



Scottish Capabilities

- Scotland is internationally recognised for its subsea engineering expertise and has a broad range of capabilities in this area.
- Scotland has been at the forefront of developing innovative solutions for drilling and subsurface evaluation due to the high cost of operating in the North Sea.
- Scottish capability in the design and fabrication of offshore structures has broad applicability across sectors.
- There are a significant number of Scottish O&G support service companies with capabilities in development and consenting, project management, logistics, ect.



Key Opportunities

- The offshore wind sector present some of the most readily accessible opportunities for the Scottish O&G supply chain, and is forecast to invest up to £210bn between 2016 and 2025, primarily in Europe.
- The heat networks market is expected to grow significant in the short term and has several strong areas of crossover with O&G.
- There is direct crossover of skills and technology from the oil and gas industry to the geothermal market .
- Longer term potential exists for oil and gas companies to enter the hydrogen market.

Area for Further Analysis – Energy Efficiency



Scottish Capabilities

- There are approximately 31,000 construction companies in Scotland supporting 170,000 jobs.
- Up to 14,000 Scottish businesses currently work in low carbon construction markets.
- Scotland has strong capabilities in architecture and design which help to provide a natural advantage in the low carbon buildings sector.
- Scotland has strengths in its universities and colleges in niche areas such as building product development.



Key Opportunities

- SEEP aims to transformed the energy efficiency and heating of Scottish buildings so that, wherever technically feasible, and practical, all buildings are near zero carbon by 2035.
- In 2015, 63% of Scottish homes had a Energy Performance Certificate of band D or below.
- In 2015, 34% of Scottish social housing dwellings had uninsulated walls and 48% of private sector dwellings.
- Low carbon building technology sales in Scotland are forecast to be worth £1.9bn by 2020.

Area for Further Analysis– Digital Energy



Key Opportunities

- The growth of smart local energy systems presents an opportunity for Scotland to be at the forefront of developing solutions for the peer-to-peer trading of energy.
- There is an opportunity to create a cluster of digital offshore businesses in Aberdeen and Aberdeenshire, making Aberdeen the data capital of the oil & gas sector.

SE Approach

Our support for the energy sector is aligned with four interconnected drivers of growth, as set out in the Scottish Government Economic Strategy, SE Business Plan and HIE Operating Plan

Our **internationalisation** ambitions are to attract new investment into Scotland, and work with an increased number of companies to export more of their products and services.



Our **innovation** ambitions are to support more companies to innovate to grow, at home and overseas, and increase Scotland's business expenditure on R&D.



Our **investment** ambitions are to build Scotland's assets in key sectors and help more businesses access growth finance to invest, innovate and expand at home and overseas.



Our **inclusive growth** ambitions are to help build workplaces, workforces and places that help businesses and sectors to be fairer and more creative in their growth and development.



