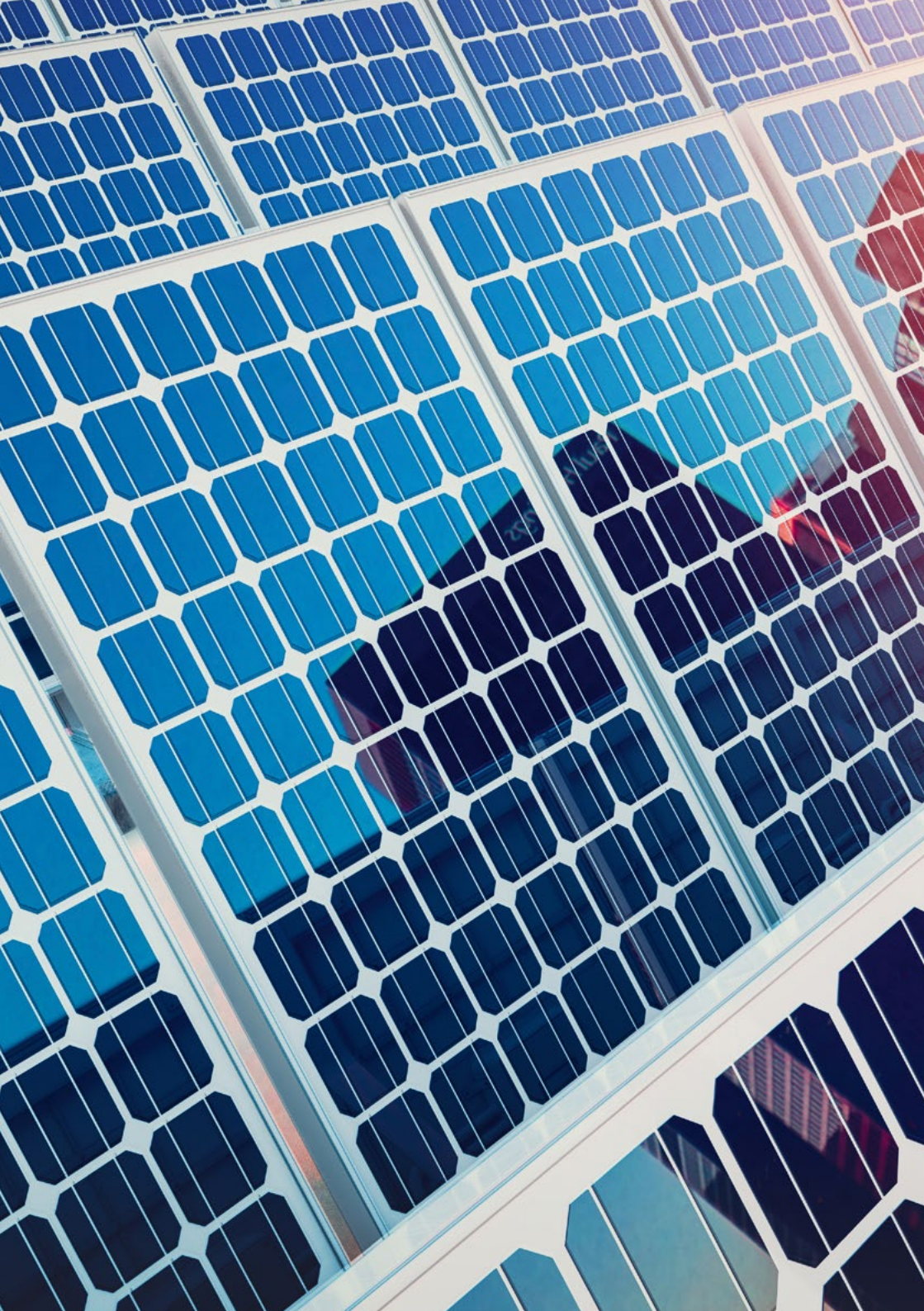
Energy Investment Opportunities

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND



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Foreword by the Secretary of State for International Trade

I am delighted to introduce this first investment portfolio covering the UK's energy sector. This investment portfolio showcases a sample of current energy investment opportunities, and also highlights the investment potential of the UK's energy sector generally. Portfolios highlighting our offering in other industries have been well received by the international investment community, attracting interest from across the globe and promoting a better understanding of the UK's investment offer. We are confident that the opportunities in our new energy portfolio will be similarly welcomed.

The UK has prioritised a transition to an economy that grows cleanly, supported by a low carbon energy system and the efficient use of resources. This commitment to clean growth provides significant investment opportunities across the UK's energy industry. Government's commitment to reducing our carbon emissions under the Climate Change Act is transforming the UK's approach to power generation, transport, industry, agriculture and the built environment. Through our Clean Growth Strategy, we have set out how we plan to deliver this transformation.

Our role in the global transition to an energy system that is cleaner and smarter starts from a position of strength. In 2017, approximately half of our electricity came from low carbon sources, around double the level in 2010[1]. We were early adopters of clean and renewable electricity generation technologies, and government continues to encourage the development and commercialisation of low carbon technologies through innovation funding and support. The action we have taken means the UK is well positioned to leverage the investment opportunities arising from the transformation of our energy system.

This portfolio highlights key prevailing trends within our energy sector and showcases investment opportunities that these trends are unlocking. We invite you to be part of this success.

The Rt Hon Dr
Liam Fox MP

Secretary of State *for International Trade and President of the Board of Trade*

1 BEIS: Statistical Press Release, UK Energy Statistics, Q3 2017

DIT's Capital Investment team

The Department for International Trade helps businesses export, drives investment, opens up markets and champions free trade.

As an international economic department, our role is to:

- Enable and support firms to seize the opportunities of trade and international investment to establish a culture of exporting in the UK
- Ensure the UK is recognised as the best place to invest and to attract, retain and grow international investment that strengthens the economy, supported by the UK's Industrial Strategy
- Open markets, building a trade framework with new and existing partners which is free and fair
- Use trade and investment to underpin the Government's agenda for a Global Britain and its ambitions for prosperity, stability and security worldwide

DIT's Capital Investment team acts as a one stop shop to align investors with a credible project pipeline, helping them understand the associated returns. We work closely with a range of UK based commercial and governmental organisations to understand their capital raising priorities and ensure their offer is investable.

We also support international investors in identifying suitable opportunities and help navigate their investment journey. We realise the value government can add to the investment process, using our global network of international offices to manage relationships with investors, large corporates, high net worth individuals and families, private sector agents and other governments.

The UK is a leading global destination, and No.1 in Europe,[2] for attracting foreign direct investment. DIT's Capital Investment team promotes investment into energy, infrastructure, property and high growth firms. We have a strong track record, having attracted billions of pounds of foreign investment into major projects.

We work in the fields of:

- Large capital projects in property development, regeneration, energy and infrastructure.
- Attracting growth capital from venture capital and private wealth investors into high growth potential businesses, for example in technology sectors.

We are able to offer expert guidance, utilising a range of specialists in property development and finance, project finance, energy, transport, regulated assets, venture capital and entrepreneurship.

For further details or to arrange a meeting to discuss potential opportunities, please email: **capitalinvestment@trade.gov.uk**

2 EY 2018 UK Attractiveness Report: https://www.ey.com/uk/en/newsroom/news-releases/18-06-11-uk-remains-top-destination-for-inward-investment

The energy transition – changing the UK's energy landscape

The UK energy system is in transition. It is changing rapidly and is transforming the way in which we:

Generate electricity

Today, there is more low carbon generation in our energy mix. There are also many more localised clean generation resources in our energy system.

Consume energy

The decarbonisation of our transport and heating systems is changing the way we use energy. In addition, the application of innovative technologies is providing more data on the way in which we use energy, thereby increasing control for consumers over their energy consumption.

Interact with the energy system

Due to a steady demand for renewable energy and the emergence of smart technologies, many individuals and households are becoming both consumers and producers of electricity. This trend is leading to a change in the role consumers typically play within our energy system.

Energy transition drivers and UK investment opportunities

There are three major trends driving the ongoing reshaping of the energy landscape in the UK and globally - decarbonisation, decentralisation and digitisation.

Decarbonisation

Under the 2008 Climate Change Act, the UK has committed to reducing greenhouse gas emissions by at least 40% by 2030, and by 80% by 2050 (compared to 1990 levels).[3] Our Industrial Strategy prioritises the decarbonisation of electricity generation, heat and transportation in order to achieve these targets.

To meet our decarbonisation challenge we will need to mobilise significant public and private capital into decarbonisation projects across electricity generation, heat and transportation. We will also need to invest significantly into research and development to stimulate innovation and deployment in these sectors of our economy.

Decentralisation

Electricity is increasingly being generated closer to where it is used. Localised electricity generation reduces energy costs and improves security of supply nationally as the system does not have to rely on relatively few, large and remote power stations.

The fragmentation of generation assets into smaller distributed units will open investment opportunities to new investors who previously had limited exposure to the power generation industry. Also, investment will be required into technology that integrates distributed energy assets into the electricity system.

Digitalisation

Digital technologies provide great potential to improve the efficiency and sustainability of energy systems worldwide. As a result, digitalisation is becoming increasingly important across the energy industry. When integrated within the energy system, smart technologies and data analysis software can provide significant efficiency and integration improvements, helping to reduce costs and improve performance.

An effective shift to decarbonisation in power generation, transport and heating will require large scale investment into digital technologies and innovation, providing significant investment opportunity.

3 Committee on Climate Change: UK Climate Action Following the Paris Agreement, October 2016

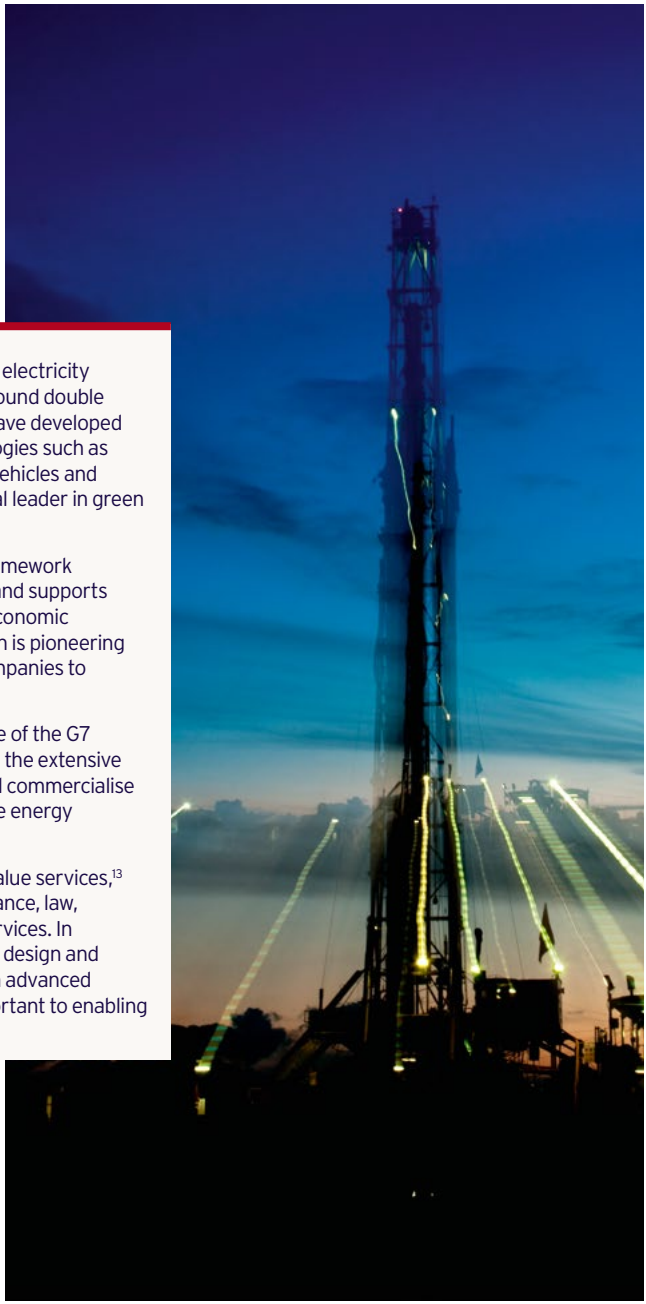
The UK's role in the global energy transition starts from a position of strength

In response to the challenges and opportunities presented by our changing energy landscape, we published our Clean Growth Strategy in 2017.[4] Clean growth was one of the four Grand Challenges put forward in our Industrial Strategy as areas of priority for Government in growing Britain's competitive advantage in the sectors that will define the global economy over the coming decades. These strategies set out the UK's ambitions in cutting greenhouse gas emissions and achieving clean growth while providing consumers and businesses with an affordable, stable energy supply.

The UK is well-placed to take advantage of the shift to a clean energy economy, as well as leverage our competitive advantages, including:

- Being one of the first countries to recognise and act on the economic and security threats of climate change. We have been among the most successful countries in the developed world in growing our economy while reducing emissions. Since 1990, we have cut emissions by over 40 per cent while our economy has grown by more than two thirds.[5]
- Since 2010 over 30GW of new capacity has been added to the electricity grid, around 75% from renewable sources.[6]
- We were an early adopter of clean energy generation technologies, allowing us to become a world leader[7] in the development and deployment of low carbon energy generation. As an example, the UK generates more electricity from offshore wind generation sources than any other country.[8]

4 www.gov.uk/government/publications/clean-growth-strategy **5** BEIS (2018) Provisional Greenhouse Gas Emissions Inventory Statistics 2017 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/695930/2017_Provisional_Emissions_statistics_2.pdf; ONS (2018) Series ABMI. Seasonally adjusted chained volume measures https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pgdp **6** Infrastructure and Project Authority: Analysis of the National Infrastructure and Construction Pipeline, December 2017 **7** BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017



• In 2017, approximately half of our electricity came from low carbon sources, around double the level in 2010.[9] In addition, we have developed world leading expertise in technologies such as power electronics for low carbon vehicles and electric motors, and we are a global leader in green finance.[10]

• A stable policy and regulatory framework that provides long-term direction and supports innovation, with an independent economic regulator for energy markets which is pioneering in its approach to encouraging companies to innovate.[11]

• The most productive science base of the G7 countries[12] – a valuable asset, given the extensive innovation required to develop and commercialise low carbon technologies across the energy industry.

• World leading expertise in high-value services,[13] with strengths in areas such as finance, law, consultancy, software and data services. In addition, we offer excellence in the design and manufacture of products based on advanced technologies. All of which are important to enabling the low carbon transition.

8 Infrastructure and Project Authority: Analysis of the National Infrastructure and Construction Pipeline, December 2017
9 Statistics from UK Energy Trends, July 2018 https://www.gov.uk/government/statistics/electricity-section-5-energy-trends; https://www.gov.uk/government/statistics/energy-trends-section-6-renewables **10** BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017 **11** OECD (2002) Reviews of Regulatory Reform, Regulatory Reform in the United Kingdom, Regulatory Reform in Gas and Electricity and the Professions **12** Elsevier (2017), International comparative performance of the UK Research Base 2016 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/651174/uk-research-base-international-comparison-2016.pdf
13 Green Alliance (2016) Will the UK economy succeed in a low carbon world? http://www.green-alliance.org.uk/UK_low_carbon.php.

According to the Infrastructure and Projects Authority, the UK has over £57 billion of energy investment projects in the pipeline to 2021.[14] As our energy system transitions to one that is cleaner, flexible, and more efficient, investment opportunities will increase across this industry.

Since 2010 over 30GW of new capacity has been added to the electricity grid, around 75% from renewable sources.[15]

The UK has the most offshore wind generation built anywhere in the world, with around 40 per cent of the global installed capacity.[16]

The UK is predicted to need an additional 500MW of new energy from waste processing capacity, unlocking an approximately £4 billion capital investment opportunity.[17]

Government has highlighted the need for investment in nuclear by committing £460 million to support innovation and research and development.[18]

The value of capital projects yet to be developed in the UK's oil and gas sector is anticipated to be up to £40 billion.[19]

The Global energy storage market is expected to require $103 billion in investment to 2030.[20] Government has committed £256 million in innovation funding to develop the market in the UK.[21]

By 2020, £45 billion of new investment is required to upgrade our energy networks to meet the requirements of a clean and flexible energy system.[22]

14 Infrastructure and Project Authority: Analysis of the National Infrastructure and Construction Pipeline, December 2017
15 Infrastructure and Project Authority: Analysis of the National Infrastructure and Construction Pipeline, December 2017
16 IRENA (retrieved September 2017) http://www.irena.org/home/index.aspx 17 Suez Energy: Mind the Gap 2017-2030 – UK Residual Waste Infrastructure Capacity Requirement

18 BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017 19 UK Oil & Gas, Economic Report 2017: https://cld.bz/825WAMy/48 20 Bloomberg New Energy Finance: 2017 Global Energy Storage Forecast 21 BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017 22 BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017

Investment Opportunities

The global energy transition will create significant investment opportunities. An estimated $13.5 trillion of public and private investment in the global energy sector will be required between 2015 and 2030.[23] In the UK, we have over £57 billion of energy investment projects in the pipeline to 2021.[24] As the UK's energy system transitions to one that is cleaner, flexible and more efficient, investment opportunities will increase across our energy industry, including the following sub-sectors:

Offshore Wind

The UK has the most offshore wind generation built anywhere in the world, with around 40 per cent of the global installed capacity.[25] At the end of 2017 UK offshore wind installed capacity stood at 5.8GW, with 6.0GW under construction and a further 2.2GW with final investment decisions pending.[26]

The cost of offshore wind has fallen significantly, making it an attractive technology for generating grid scale electricity whilst reducing carbon emissions and increasing security of supply. The UK government continues to encourage investment in renewable technologies such as offshore wind through allocating up to £557 million[27] for further subsidy support (in the form of contracts for difference (CFDs)).

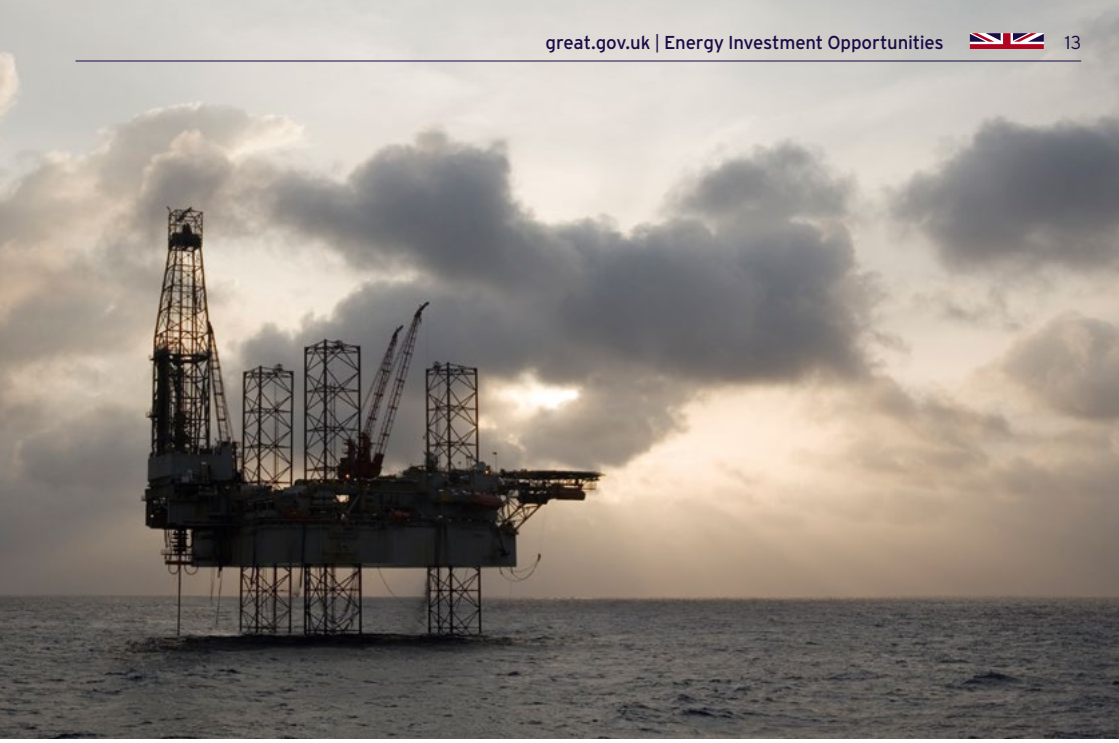
The next CFD auction will open by May 2019 with subsequent auctions every two years after that. Depending upon auction clearing prices this could mean 1-2GW of new offshore wind capacity every year in the 2020s. The offshore wind sector has said it could deliver 30GW by 2030, providing a £48 billion investment opportunity.[28]

Nuclear

Nuclear energy plays an important role in the UK energy mix, contributing around 20% of total electricity generation.[29] As the UK energy systems transitions toward a low carbon future, growing low carbon sources of electricity, including nuclear generation, will remain a key priority.

Government has highlighted the need for investment in nuclear by committing £460 million to support innovation in areas including future nuclear fuels, new nuclear manufacturing techniques, recycling and reprocessing, and advanced reactor designs,[30] including £56m announced for nuclear R&D as part of a Nuclear Sector Deal agreed with industry in June 2018.

23 BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017 **24** Infrastructure and Project Authority: Analysis of the National Infrastructure and Construction Pipeline, December 2017 **25** IRENA (retrieved September 2017) http://www.irena.org/home/index.aspx **26** The Crown Estate: Offshore wind operational report 2017 **27** https://www.gov.uk/government/news/government-confirms-up-to-557-million-for-new-renewable-energy-projects **28** Renewable UK: UK Offshore Wind Industry Reveals Ambitious 2030 Vision (https://www.renewableuk.com/news/391723/UK-Offshore-Wind-Industry-Reveals-Ambitious-2030-Vision.htm) **29** Energy UK, Energy in the UK, 2017 **30** BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017



Oil and Gas

The UK oil and gas industry has a key role to play in the UK's transition to a low carbon energy system. Through its commitment to the Driving Investment strategy, Government has played a key role in promoting investment into the UK's oil and gas sector by rewarding investment at all stages of the industry lifecycle and providing a high level of support to the sector in the 2015, 16 and 17 budgets.[31]

The UK oil and gas industry offers opportunities to investors across exploration, development, production and downstream activities. Whilst investment in oil and gas is sensitive to global oil prices and wider market factors, the value of potential capital development projects in the UK is anticipated to be almost £40 billion.[32] As oil and gas facilities approach the end of production they will need to be decommissioned in a safe and environmentally sound manner, generating new investment opportunities and creating the opportunity for the UK to become a market leader in oil and gas decommissioning activities.

Energy from waste

The UK is well placed to see increased activity in energy from waste project development. This is, in part, due to restrictions on access to landfill waste capacity, and the closure of many landfill sites across the country.

Based on current market trends, a capacity gap for energy from waste and other non-landfill treatment facilities of approximately 4.6 million tonnes is expected by 2025. This capacity gap will require new energy from waste processing capacity of more than 500MW,[33] thereby unlocking an approximately £4 billion investment opportunity[34] in the UK's energy from waste sector.

31 https://www.ogauthority.co.uk/about-us/investing-on-the-ukcs/fiscal/ **32** UK Oil & Gas, Economic Report 2017: https://cld.bz/825WAMy/48 **33** Suez Energy: Mind the Gap 2017-2030 – UK Residual Waste Infrastructure Capacity Requirement **34** Suez Energy: Mind the Gap 2017-2030 – UK Residual Waste Infrastructure Capacity Requirement

Electricity storage and system balancing

With increasing levels of intermittent and decentralised renewable generation, storage and electricity system balancing are increasingly becoming a priority. Electricity storage and system balancing services could be used to manage generation intermittency and provide critical system services to the system operator.

Whilst revenue profiles for energy storage projects are developing, revenue diversification or 'stacking' opportunities exist for energy storage projects, including frequency response services, grid charge reductions and arbitrage opportunities. From an investment opportunity perspective, the global electricity storage market is anticipated to grow to a cumulative 125GW/305GWh by 2030, attracting $103 billion in investment over this period.[35]

The UK is well placed to leverage this investment opportunity. Government has committed £256 million in innovation funding for energy storage and grid balancing services to develop this sector within the UK.[36]

Electricity networks

As the UK transitions to a low carbon energy system, our electricity networks will require significant development. Factors such as the increased level of decentralised and renewable electricity generation requiring grid integration, and the anticipated uptake in the level of electric vehicles (and charging infrastructure) will require our electricity networks to become smarter and more flexible.

The changing role of our networks will create significant new investments opportunities. It is forecast that by 2020, £45 billion[37] of new investment is required to upgrade our electricity grid to meet the requirements of a clean and flexible energy system. In order to encourage this investment into our energy networks, Government has committed £265 million[38] to support innovation and technology development in this area.

35 Bloomberg New Energy Finance: 2017 Global Energy Storage Forecast **36** BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017 **37** Energy Networks Association: Response to Cost of Energy Review Call for Evidence **38** BEIS: The Clean Growth Strategy - Leading the way to a low carbon future, October 2017

Building on the success of others

Working with stakeholders and partners, the DIT Capital Investment team have facilitated the flows of international capital into UK-wide projects, across our energy industry. Here are some of our successes where we have supported project developers and international investors.

Offshore Wind Project, Hull - £870 million

This £870 million project is 100% owned by Ørsted and with a capacity of 1.2GW will be the largest offshore wind farm in the world. Once completed in 2020, it will produce enough energy to power over 1 million homes.

Located off the Yorkshire coast, the Hornsea Project One spans a huge area of 407 square kilometres, which is over five times the size of the city of Hull. The offshore wind farm will use 7 MW wind turbines, with each one 190 metres tall.

Investment in Oil & Gas Assets, UK North Sea - £2.4 billion

Harbour Energy acquired a diversified package of North Sea operating and non-operating oil and natural gas assets from Royal Dutch Shell in 2017. The strategic outcome of the investment was to create the UK's leading independent oil and gas company focused on the North Sea.

The acquisition included Shell's interests in ten operated and non-operated field areas, in addition to associated infrastructure and midstream assets. Collectively, the assets produced 115,000 barrels of oil equivalent per day in 2016. With this investment, assets set to be decommissioned have remained operational. The acquisition will provide a platform for future Harbour Energy investments potentially worth $780 million from 2018 – 2021.

Energy from Waste Facility Project, Bedfordshire - £300 million

Covanta and Veolia, two market leaders in the energy from waste industry, partnered to develop the Rookery South Energy from Waste Facility at a former brick clay extraction pit in Bedfordshire. The facility will use municipal, commercial, and industrial waste as fuel to generate heat and electricity.

The facility will generate over 60MW of electricity from over 500,000 tonnes of waste per year and meet the electricity requirement of 75,000 homes. In addition, heat generated by the facility will be utilised to support a local district heating system. The facility represents waste infrastructure that will help the UK achieve national recovery, recycling and renewable energy targets.

Offshore Electricity Transmission Investment, UK, Irish Sea £90 million

Mitsubishi (via its 50% ownership of the Diamond Transmission joint venture) was awarded the licence to develop the connection between the Burbo Bank Extension windfarm and the UK mainland electricity network.

The Burbo Bank Extension Offshore Wind Farm is located off the west coast of the UK in the Irish Sea. The connection infrastructure includes both subsea transmission, as well as the offshore and onshore electricity substations. The connection has a transmission capacity of up to 258 MW and is valued at £194 million.

Five Reasons to invest in UK energy sector

1. According to the World Bank[39], the UK consistently ranks within the top 10 countries globally for ease of doing business.

2. Our stable policy and regulatory framework that provides long-term direction and supports innovation.

3. An independent economic regulator for energy markets which is pioneering in its approach to encouraging companies to innovate.

4. Strong government support for the energy industry reflected in its Industrial Strategy and significant fiscal measures to encourage investment and development funding.

5. Internationally renowned capability in technology, innovation and high-value services.

39 Doing Business 2018, A World Bank Group Flagship Report http://www.doingbusiness.org/rankings

INVEST IN GREAT
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Aberdeen Hydrogen Infrastructure Development Programme

Aberdeen and North East Scotland

Opportunity

Aberdeen City Council is seeking investment and development partners for the phased delivery of a £850 million hydrogen infrastructure development programme. The Council is open to a variety of investor involvement to include debt and equity partners, co-investment and development funding. This is an early stage strategic opportunity to shape the programme and offers the potential for a long-term relationship with this public sector partner.

Project Promoters:
Aberdeen City Council

Scale:
Up to £850 million in phased development – capital expenditure

Sector:
Clean Fuels / hydrogen infrastructure

Location:
Aberdeen and North East Scotland

Investment Type:
Equity / combined debt and equity

investaberdeen.co.uk / h2aberdeen.com

Overview

Project Description

Aberdeen City Council is seeking to build on its existing £35 million investment in hydrogen production, refuelling infrastructure and hydrogen powered vehicles. The City Council is now seeking to increase the pace and scale of its strategic hydrogen infrastructure programme, in order to realise its stated ambition for Aberdeen to become a world-class energy hub at the forefront of hydrogen technology in Europe.

In the first phase of this programme, Aberdeen City Council will be engaging in strategic dialogue with potential investment and development partners to market test its proposals across a range of multi-phased projects covering:

- **Developing hydrogen production facilities and distribution networks**
  Investment will be required into the development of infrastructure for the large-scale production and distribution of hydrogen across the region, and into wider markets. The focus here will centre on delivering the scale required to allow hydrogen to be generated and distributed to end users at prices that give parity with conventional fuels.
- **Developing hydrogen refuelling infrastructure**
  Aberdeen currently has two operational hydrogen refuelling stations. A key element of the next phase of Aberdeen's hydrogen infrastructure strategy will be to deploy an accessible, convenient and safe refuelling infrastructure network across the City and beyond. The City is considering a range of investment options to fund the development of a hydrogen refuelling network infrastructure.
- **Developing infrastructure for wider hydrogen uses**
  Whilst Aberdeen's hydrogen development activities have primarily focussed on transportation, other applications for hydrogen could provide strategic benefit to the City and the wider region, including the provision of power for buildings. The use of hydrogen fuel cells for combined heat and power is an area of active interest for Aberdeen, due to the City's well-established district heating system. Investment in enabling infrastructure to realise the wider benefits of hydrogen will be central to unlocking its wider benefits.

Project Promoters

Aberdeen City Council is the promoter of this strategic hydrogen infrastructure investment programme. Aberdeen has a long history of innovation and expertise in the energy industry from being at the centre of the global oil and gas industry over the past four decades, to now developing a low carbon economy in line with ambitious national targets.

The City Council recognises that hydrogen can support these targets and has a vision for Aberdeen to build upon its global reputation as a world-class energy hub, leading a low carbon economy and at the forefront of hydrogen infrastructure and technology in Europe.

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Bristol City Leap Programme

Bristol

Opportunity

Bristol City Council is seeking investment and development partners for a low carbon energy infrastructure programme of between £800 million and £1 billion. The Council is open to a variety of investor involvement to include equity partners, co-investment or development funding. This is an early stage opportunity to shape the programme and offers the potential for a long-term relationship with this public sector partner.

Project Developers:
Bristol City Council

Scale:
£800 million to £1 billion – capital expenditure

Sector:
Integrated energy systems / SMART city

Location:
Bristol

Investment Type:
Equity / combined debt and equity

energyservicebristol.co.uk/prospectus

Overview

Project Description

The Bristol City Leap Programme is a strategically co-ordinated range of renewable and smart energy projects that Bristol City Council is currently pursuing to meet its 2050 carbon neutrality target. The intention underpinning the programme is to enable Bristol to increase the pace and scale of delivery of these innovative and state of the art projects to meet its carbon neutrality target as quickly and cost-effectively as possible.

This will enable the building of sustainable, replicable and investable business cases across the full range of energy-related technologies at city-scale for the benefit of residents, businesses, the council and programme partners.

The Programme covers a broad spectrum of city-level energy projects, including:

- **Heat Networks**
  Heat networks will allow the delivery of low carbon heat to be delivered across the city, building on Bristol's existing city centre heat network currently serving 700 social housing dwellings. The expansion will include the harnessing of waste heat from the north of the city and will include an increased use of combined heat and power plants, waste heat, geothermal and future technology on heat networks.
- **Grid and smart demand-side**
  The council aims to work with the local distribution and national transmission companies and aggregators to build demand-side response capacity on the local electricity network. This will facilitate the roll-out of electric vehicles, embedded generation and smart appliances, linked to smart metering and future time-of-use tariffs.
- **Renewable Energy**
  The Council has installed or facilitated a variety of renewable electricity and heat generation measures across the City over the last decade. The Programme would provide the financial and integrated planning capacity required to deliver the programme at scale, including wind, solar and storage technologies.
- **Low Carbon Transportation**
  The programme will focus on rapid mass transit, low emission vehicles and charging infrastructure, autonomous vehicles trials, behaviour change and the integration of smart operating systems.
- **Energy Efficiency**
  City Leap would provide the finance, create the demand and engage the supply chain for a broad ranging package of domestic and commercial energy efficiency measures, all of which are required to deliver an energy efficiency programme at scale.

Project Developer

Bristol City Council are the promoters of this large scale, integrated energy project. Bristol has long led the way in the fields of energy, sustainability, digital and future start-up companies.

It was the European Green Capital in 2015, and was voted the number one smart city in the UK in 2017. To date the City has successfully delivered c. £50 million of low carbon energy investment. The Mayor and Councillors across all parties are committed to continued delivery and want to achieve a step change in the delivery of the low carbon, smart energy infrastructure.

INVEST IN GREAT
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Carlton Forest Energy from Waste Facility

Worksop, Nottinghamshire

Opportunity

With a capital requirement of £60 million, this project provides an opportunity for investment in the development and operation of an energy from waste facility with diverse revenue streams and strong investment returns. The developers will consider a variety of investor involvement to include combined debt and equity or co-investment. The Project will be owned and operated under a special purpose vehicle to be set-up by the developers.

Project Developers:
Carlton Forest Group LLP

Scale:
£60 million – capital expenditure

Sector:
Energy from waste / recycling

Location:
Worksop, Nottinghamshire

Investment Type:
Equity / combined debt and equity

Planning Status:
Full planning consent granted

carltonforestgroup.com/energy

Overview

Project Description

The energy from waste facility will use proven technology to process and convert end-of-life tyres into steam-powered electricity generation, thermal heat production, and high-grade Carbon Black. The Project benefits from multiple revenue streams ultimately associated with the sales of the facility's outputs.

Electricity generated by the facility will be sold into the UK electricity grid under a long-term contract. The Carbon Black production, an essential ingredient used in the plastics and chemicals industries, will be sold into these core markets. Thermal heat production will be sold to the developer for use in its core logistics business.

The project benefits from the following attractive characteristics:

- Project feedstock arrangements secured under a fixed term supply contract incorporating an agreed volume, specification and delivery schedule.
- A development contractor has been selected to construct and operate the facility. The contractor will be providing a construction and operation wrap.
- The project has been de-risked using only proven technology.
- The project's diverse revenue streams all underpinned by long-term contractual arrangements.
- A grid connection agreement is in place allowing for the export of the facility's electricity generation at the required capacity.
- Full planning consent is in place for the facility and associated processing facility.
- An independent technical feasibility assessment of the project has been undertaken and confirms the project has been designed and scoped appropriately to attract the required level of investment.

Project Developer

The Carlton Forest Group provide accredited supply chain services to companies nationwide which include tailored distribution, packing and logistics services. The company's mission is to continue to be innovative and diversify into the waste management, processing and recycling markets, which are closely linked to its current core business.

INVEST IN GREAT
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CoGen Energy from Waste Facility

Birmingham, UK

Opportunity

CoGen is offering an opportunity for investment into the development of a £190 million energy from waste facility in Birmingham. Using proven technology, the project benefits from a long-term contracted revenue stream and strong investment returns. CoGen will consider a variety of investor involvement to include equity investment, blended debt and equity, or co-investment. This project forms part of a strong development pipeline of energy from waste projects being developed by CoGen, leading to potential wider funding opportunities.

Project Developers:
CoGen Ltd

Scale:
£190 million – capital expenditure

Sector:
Energy from waste

Location:
Birmingham

Investment Type:
Equity / combined debt and equity

Planning Status:
Full planning consent secured

cogenuk.com

Overview

Project Description

This project comprises the development and operation of a 24 megawatt energy from waste facility in Birmingham. The facility will use proven technology to process and convert waste to generate electricity. Electricity generated by the facility will be sold into the UK electricity grid under a long-term power purchase agreement with a credible counterparty.

The project benefits from the following attractive characteristics:

- The project has been de-risked using only proven technology. The selected technology has successfully deployed in various operational energy from waste facilities around the world.
- Project feedstock arrangements secured under a fifteen-year supply contract incorporating an agreed volume, specification and delivery schedule.
- A development contractor has been selected to construct the facility, under a fixed-price and time-certain arrangement. The contractor will be providing appropriate construction guarantees.
- CoGen has contracted with a facility operator to ensure the facility continues to perform to specification, with appropriate performance guarantees provided.
- The project's revenue stream will be underpinned by long-term contractual arrangements.
- A grid connection agreement will be in place allowing for the export of the facility's electricity generation at the required capacity.
- CoGen has entered into an option for a 25-year lease of the facility site.
- Full planning consent has been secured for the facility.
- An independent technical feasibility assessment has been undertaken and confirms the project has been designed and scoped appropriately to attract the required level of investment.

Project Developer

CoGen develops, constructs, manages and owns advanced conversion technology gasification projects utilising waste and biomass feedstocks.

The company currently has four energy from waste projects in operation in the UK, with a total capital expenditure of £250 million and an export capacity of circa 45 megawatts. With a large pipeline of projects under development, the company aims to be recognised as a leading developer of energy from waste projects in Europe.

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND

CoGen Energy from Waste Facility

North Lanarkshire, Scotland

Opportunity

CoGen is offering an opportunity for investment into the development of a £190 million energy from waste facility in North Lanarkshire, Scotland. Using proven technology, the project benefits from a long-term contracted revenue stream and strong investment returns. CoGen will consider a variety of investor involvement to include equity investment, blended debt and equity, or co-investment. This project forms part of a strong development pipeline of energy from waste projects being developed by CoGen, leading to potential wider funding opportunities.

Project Developers:
CoGen Ltd

Scale:
£190 million – capital expenditure

Sector:
Energy from waste

Location:
North Lanarkshire, Scotland

Investment Type:
Equity / combined debt and equity

Planning Status:
Full planning permission secured

cogenuk.com

Overview

Project Description

This project comprises the development and operation of a 24 megawatt energy from waste facility in North Lanarkshire, Scotland. The facility will use proven technology to process and convert waste to generate electricity. Electricity generated by the facility will be sold into the UK electricity grid under a long-term power purchase agreement with a credible counterparty.

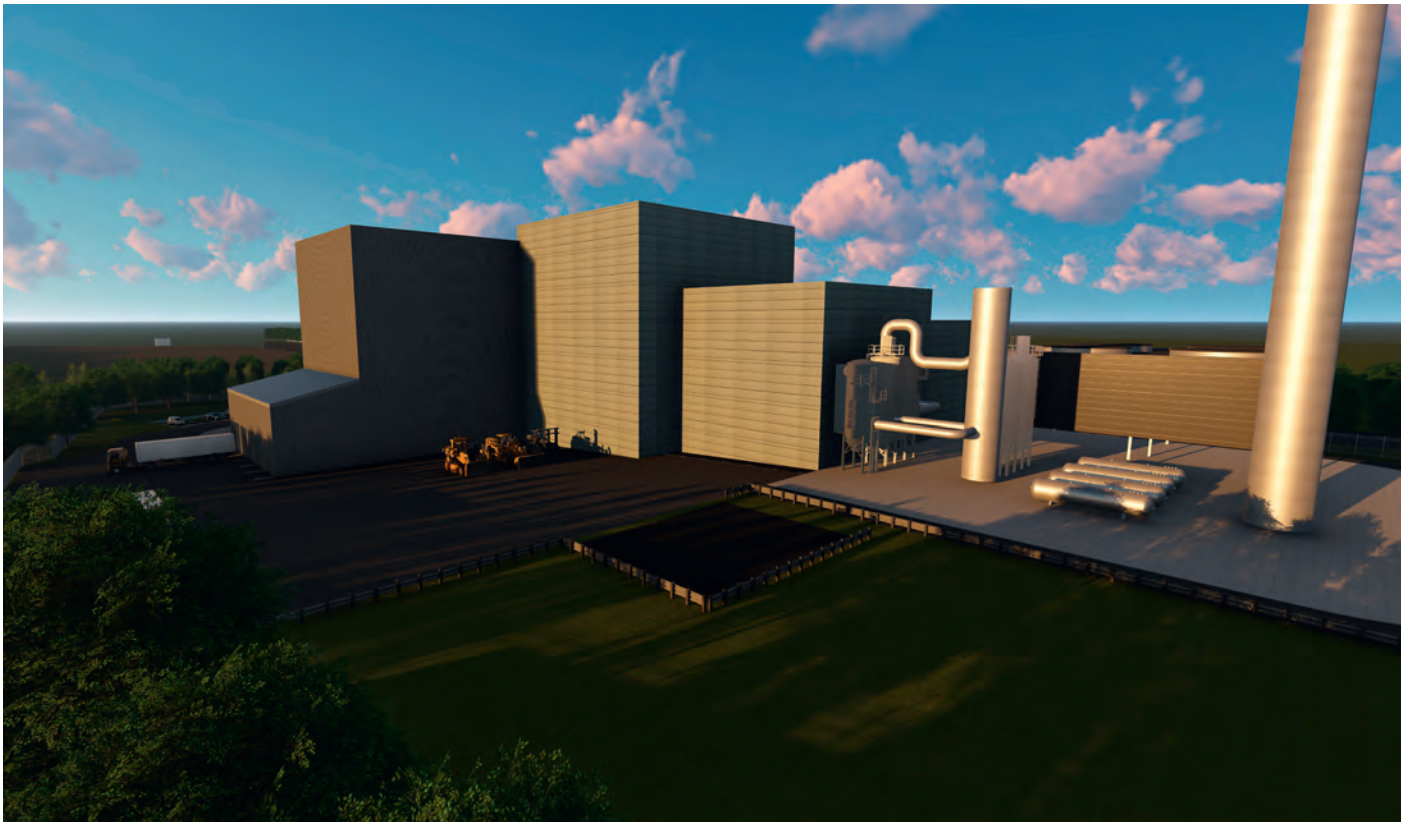
The project benefits from the following attractive characteristics:

- The project has been de-risked using only proven technology. The selected technology has successfully deployed in various operational energy from waste facilities around the world.
- Project feedstock arrangements secured under a 15-year supply contract incorporating an agreed volume, specification and delivery schedule.
- A development contractor has been selected to construct the facility, under a fixed-price and time-certain arrangement. The contractor will be providing appropriate construction guarantees.
- CoGen have contracted with a facility operator to ensure the facility continues to perform to specification, with appropriate performance guarantees provided.
- The project's revenue stream will be underpinned by long-term contractual arrangements with a credible counterparty.
- A grid connection agreement is in place allowing for the export of the facility's electricity generation at the required capacity.
- CoGen has entered into an option for a 25-year lease of the facility site.
- Full planning consent is in place for the facility.
- An independent technical feasibility assessment has been undertaken and confirms the project has been designed and scoped appropriately to attract the required level of investment.

Project Developer

CoGen develops, constructs, manages and owns advanced conversion technology gasification projects utilising waste and biomass feedstocks.

The company currently has four energy from waste projects in operation in the UK, with a total capital expenditure of £250 million and an export capacity of circa 45 megawatts. With a large pipeline of projects under development, the company aims to be recognised as a leading developer of energy from waste projects in Europe.



INVEST IN GREAT
BRITAIN & NORTHERN IRELAND

GRIDSERVE Electric Vehicle Forecourt Network

Multiple UK locations

Opportunity

With a total capital requirement of up to £1 billion, this project provides an opportunity for investment in the development and operation of a national network of electric vehicle forecourts. The project has the potential to generate diverse and parallel revenue streams from a range of sources, delivering strong investment returns. GRIDSERVE will consider a variety of investment involvement to include equity, combined debt and equity, co-investment and development funding. The project's capital funding will be phased over the development cycle.

Project Promoters:
GRIDSERVE Sustainable Energy Limited (GRIDSERVE)

Scale:
£1 billion – capital expenditure on a phased basis

Sector:
Battery energy storage / electric vehicle charging infrastructure

Location:
Multiple UK locations

Investment Type:
Equity / combined debt and equity

Planning Status:
Site specific – multiple sites being secured. Planning consent is in place for first site at Slamseys, Essex

gridserve.com

Overview

Project Description

GRIDSERVE is developing a country-wide network of customer focussed electric vehicle forecourts that provide ultra-fast electric vehicle charging services and associated retail opportunities.

In advance of the mass adoption of electric vehicles, each GRIDSERVE electric vehicle forecourt is designed to derive revenue and profitability from the provision of solar energy generation and electricity grid balancing services. Over time each electric vehicle forecourt is expected to become increasingly profitable as greater numbers of electric vehicles use each site.

The project benefits from the following attractive characteristics:

- Strong project roll-out plan, with two hundred electric vehicle forecourts to be developed and operated nationally. Four electric vehicle forecourts are scheduled to be operational by end 2019, with a further twenty operational sites by end 2020.
- Attractive business model with diverse income streams derived from developing, building, owning and operating electric vehicle forecourts.
- Large and growing addressable markets, with predictions that within 21-years 54% of new car sales will be electric, up from less than 2% today. In addition, the UK Government is set to ban new petrol and diesel car sales by 2040, with a target of 50-70% of all new car sales to be zero emission by 2030.
- Over several years, GRIDSERVE has developed close commercial partnerships with a number of supply chain partners.
- GRIDSERVE's management team have developed, built and operated over 100 large-scale UK grid-connected energy projects totalling close to one gigawatt of power capacity, covering solar power, battery storage, and sustainable energy projects.

Project Developer

GRIDSERVE is a technology-enabled sustainable energy business which develops, builds, owns and operates critical power solutions, using solar energy & battery storage.

GRIDSERVE's management team has been responsible for the development, construction and operation of more than one gigawatt of solar energy and energy storage solutions, including connecting over 100 utility-scale sustainable energy projects to the UK grid in the last five years.

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND

Mishergas Waste to Fuel Facility

Avonmouth, Bristol

Opportunity

Mishergas is offering an opportunity for investment into the development of a £65 million waste to fuel facility. The project benefits from multiple revenue streams and strong investment returns. The developers will consider a variety of investor involvement to include equity investment, blended debt and equity, co-investment or development funding. The Project will be owned and operated under a special purpose vehicle to be set-up by the developers.

Project Developers:
Mishergas Ltd

Scale:
£60 million – capital expenditure

Sector:
Waste to fuel / recycling

Location:
Avonmouth, Bristol

Investment Type:
Equity / combined debt and equity

Planning Status:
Full planning permission granted

mishergas.co.uk

Overview

Project Description

The waste to fuel facility will use proven technology to process and convert end-of-life tyres into bio-diesel and high-grade Carbon Black. The Project benefits from diverse revenue streams ultimately associated with the sale of the facility's outputs.

Mishergas is in advanced discussions with several credible organisations concerning an exclusive purchase agreement in respect of the project's entire bio-diesel production. The Carbon Black production, an essential ingredient used in the plastics and chemicals industries, will be sold to these core markets.

The project benefits from the following attractive characteristics:

- Strong market demand exists for the facility's products where industries are looking for greener alternatives to diesel and virgin Carbon Black, both derived from fossil fuels.
- Project feedstock arrangements secured under a fixed term supply contract with a national end-of-life tyre provider incorporating an agreed volume, specification and delivery schedule.
- A development contractor has been selected to construct the facility. The contractor will be providing appropriate construction and performance guarantees.
- Mishergas will contract with an operator to ensure the facility continues to perform to specification.
- The project has been de-risked using only proven technology. The selected technology has now been successfully deployed exclusively for used tyre recovery in various locations around the world.
- The project's diverse revenue streams will all be underpinned by long-term contractual arrangements.
- Full planning consent is in place for the plant and associated processing facility.
- An independent technical feasibility assessment has been undertaken and confirms the project has been designed and scoped appropriately and that the facility's proposed technology and production processes are viable.

Project Developer

Mishergas is a leading company for the development of waste to fuel technology in the UK. The company has selected a number of manufacturers and technology providers to create a specialised energy and fuel recovery process.

Using this process, Mishergas provides a sustainable and profitable solution to the huge environmental liability of waste tyres. Drawing from a wide range of over 50 years of aggregate experience, Mishergas seeks to find innovative solutions and best practices to address current demands and subsequent threats to the environment.

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND

Morlais Marine Energy Infrastructure Project

North West Wales

Opportunity

Menter Môn is offering an opportunity for investment into the development of a £35 million marine energy infrastructure facility. The developers will consider a variety of investor involvement to include equity partners, co-investment or development funding. This is an early stage opportunity to shape an emerging market project.

Project Promoters:
Menter Môn Ltd

Scale:
£35 million capital expenditure

Sector:
Tidal stream electricity generation

Location:
Anglesey, North West Wales

Investment Type:
Equity

mentermon.com/en/priosectau/morlais

Overview

Project Description

The Project comprises the development of 180 megawatt tidal stream energy infrastructure facility, located in North West Wales. The facility will provide enabling infrastructure and energy storage for the transmission of electricity generated by independent tidal stream generators to the national grid, for sale into the UK electricity market.

The project's business model is predicated on independent generators paying annual rent in lieu of the development and ongoing availability of the infrastructure. As a result, the project is separate from the generation or sale of tidal stream electricity.

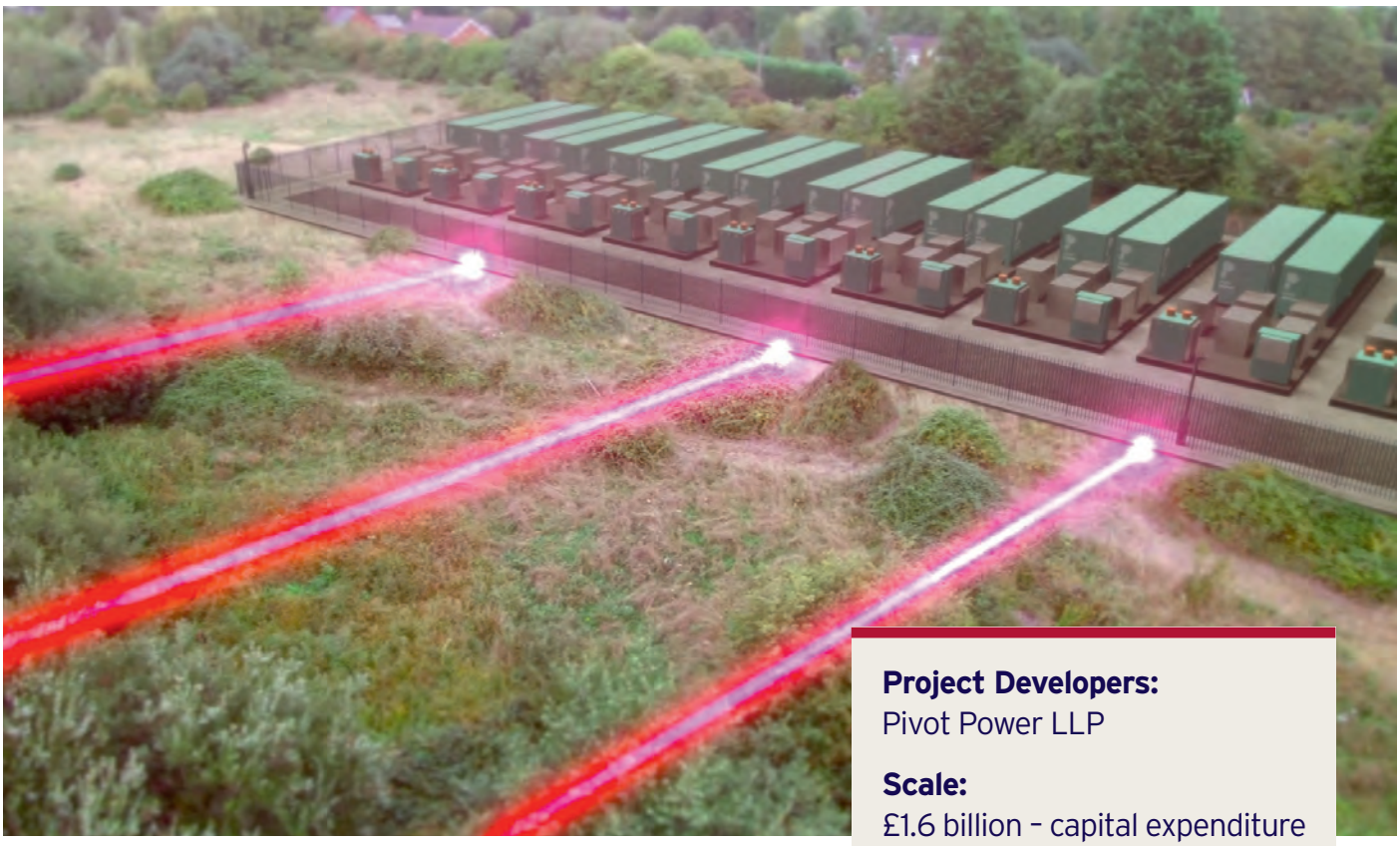
The project forms part of the Anglesey Energy Island programme, which will create a world-renowned centre of excellence for the generation and transmission of low carbon energy. The project is located in one of three priority zones in the UK identified by the Crown Estate for tidal stream energy development. It will benefit from the following attractive characteristics:

- Project cashflows are de-linked from tidal generation capacity and technology risk.
- The project is unique in its proximity to the UK distribution and transmission networks. Grid connection arrangements are in place with a baseline capacity in excess of 200 megawatts, underpinned by options to increase future capacity.
- The project benefits from a £20 million Welsh European Funding Office grant. This grant, which is contingent on residual project funding being secured, does not require repayment or return on investment.
- A 45-year lease for the project was awarded to the Developers in April 2014. The zone extends to 35km^2 of sea bed and can accommodate up to 240 megawatts of generation.
- The project has support from a range of local stakeholders, including the Anglesey County Council, which established the Anglesey Energy Island programme.

Project Developer

Menter Môn is a company providing solutions to the challenges facing rural Wales. The company works with businesses and communities to deliver meaningful projects, that harness their strengths and contribute to a sustainable future.

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND



Pivot Power Battery Storage and Electric Vehicle Charging Portfolio

Multiple UK locations

Opportunity

With a total capital requirement of up to £1.6 billion, this project provides an opportunity for investment in the development and operation of a national network of integrated grid-scale battery storage and electric vehicle charging facilities. Pivot Power will consider a variety of investor involvement to include equity partners and co-investment. The project's capital funding will be phased over the roll-out period, offering the opportunity to partner with a market-leading project.

Project Developers:
Pivot Power LLP

Scale:
£1.6 billion – capital expenditure on a phased basis

Sector:
Battery energy storage / electric vehicle charging infrastructure

Location:
Various UK locations

Investment Type:
Equity

Planning Status:
Site specific – planning consent secured for the first two sites at Southampton and Carlisle

pivot-power.com

Overview

Project Description

Pivot Power is developing a national network of grid-scale batteries to support the UK transition to a cost-effective, flexible, low-carbon energy system and enable rapid electric vehicle (EV) charging to accelerate the adoption of clean transport.

To date, Pivot Power has secured a pipeline of 2.25 gigawatt of grid-scale battery storage connections across 45 strategic locations in the UK. The project's pipeline is rapidly maturing, with the first two sites (in Southampton and Carlisle) targeting commissioning in October 2019.

The project benefits from the following attractive characteristics:

- A business model underpinned by diversified and resilient revenue streams across multiple markets.
- Significant economies of scale from 45 connections to the UK electricity transmission system, which enable attractive commercial opportunities from an unprecedented 2.25 gigawatt of battery storage assets.
- Battery storage assets located near towns and major roads where they can also power rapid EV charging and supply power to nearby commercial and industrial clients.
- Ability to leverage value from rapid EV charging and energy sales to commercial and industrial customers.
- Strong relationships and partnerships with local councils and other key stakeholders to accelerate deployment.

Project Developer

Pivot Power is a developer, owner and operator of large battery storage projects connected directly to the transmission system. These batteries bring valuable flexibility to the grid, enabling it to harness increasing volumes of renewable generation, as well as supporting an energy system that is clean, affordable and secure.

Pivot Power is deploying the essential infrastructure required for the provision of low-cost, mass-market charging facilities for EVs.

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND

Project Developers:
Reliagen Holdings Ltd

Scale:
Up to £40m capex

Sector:
Battery energy storage

Location:
Staines-upon-Thames, West London

Investment Type:
Equity

Planning Status:
Full planning permission granted

Reliagen Integrated Electric Vehicle and Battery Storage Facility

West London UK

Opportunity

With a capital requirement of up to £40 million, this project provides an opportunity for investment in the development and operation of an integrated electric vehicle (EV) charging and battery energy storage facility. Reliagen is developing a pipeline of similar sites around London and other cities in the UK, where opportunities exist to integrate commercial scale rapid EV charging hubs with battery energy storage facilities connected to the electricity grid. As a result, Reliagen is open to discuss wider development capital investment, as well as out-right purchase of this project's development rights.

Overview

Project Description

Strategically located in Staines-upon-Thames (West London), this project comprises the development and operation of an integrated 49 megawatt battery energy storage facility and commercial EV charging hub. The project has been designed to target the commercial EV charging opportunities associated with the creation of an Ultra-Low Emissions Zone in Central London and Greater London.

In parallel, the project's location to grid access points near London will provide unique opportunities for the provision of electricity grid services and trading opportunities. The project will also provide rapid charging services to logistics and distribution fleets on routes in and out of London and the surrounding areas.

The project benefits from the following attractive characteristics:

- A strategically located site in London with good proximity to major transport routes and grid access points.
- Flexibility to maximise returns by allowing for the creation of multiple parallel income streams, derived from providing support services to the electricity grid, as well as revenues from commercial scale EV charging services.
- Full planning permission for the integrated battery storage and electric vehicle charging facility is in place.
- With site lease terms agreed, the lease is ready for completion upon project funding commitment.
- An attractive grid connection agreement with no upgrade or modification works required.
- A project battery storage facility that is technology neutral, allowing an investor to utilise its preferred battery technology.

Project Developer

Reliagen is a UK based developer of innovation led projects across the renewable energy industry. Reliagen's development team have been working on energy infrastructure projects for over 20 years covering waste, biomass, biogas and solar PV. These projects have been developed at varying scales and locations around the UK, covering a range of international technologies and levels of complexity.

INVEST IN GREAT
BRITAIN & NORTHERN IRELAND

Department for International Trade

great.gov.uk

DIT
The UK's Department for International Trade (DIT) has overall responsibility for promoting UK trade across the world and attracting foreign investment to our economy. We are a specialised government body with responsibility for negotiating international trade policy, supporting business, as well as delivering an outward-looking trade diplomacy strategy.

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