



Carbon Trust Innovation

Brief Introduction

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The Carbon Trust has a 10-year history of accelerating low carbon businesses



Our mission:

- To accelerate the move to a low carbon economy

What we do:

- We advise businesses and governments on their opportunities in a sustainable, low carbon world
- We measure and certify the environmental impact of organisations, supply chains and products
- We help develop and deploy low carbon technologies and solutions, from energy efficiency to renewable power

What we have achieved:

- Helped our customers to save £3.7 billion
- Helped our customers to save 38m tons of CO₂
- Catalysed over £300m of investment into clean technologies



We have developed a wealth of experience over the past ten years



Delivering different solutions for different customers along the innovation journey



Example customers:



Technology Strategy Board
Driving Innovation

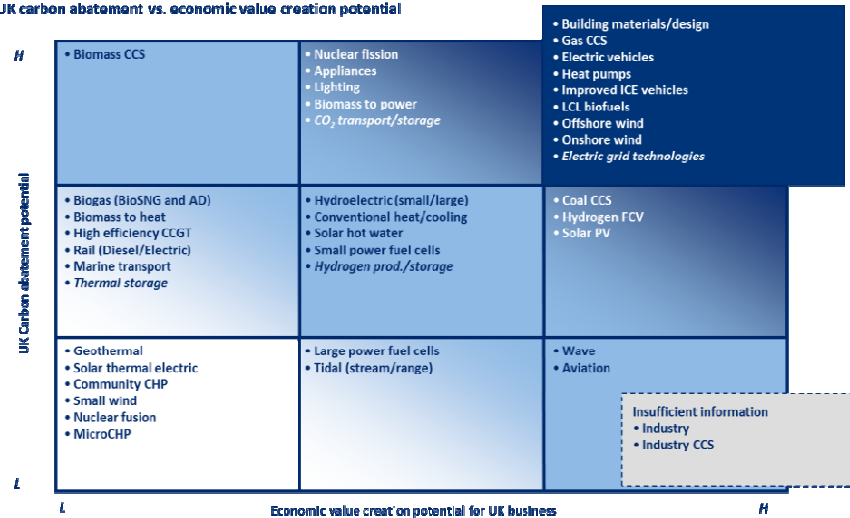
**Confidential: oil
and gas major**



Innovation strategy



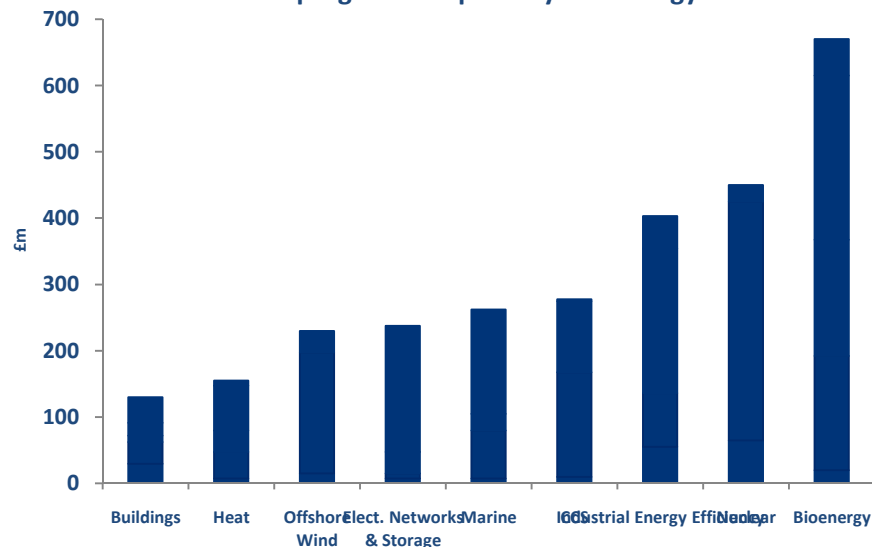
UK carbon abatement vs. economic value creation potential



Technology Innovation Needs Assessments (TINAs) & LCICG Strategy

- Prioritised to 11 technology areas
- Worked with key funders (LCICG) to create shared view of innovation needs for each
- Identified c. 140 programmes costing c. £3bn over the next 5 years that could reduce the cost of deployment by £3-45bn by 2050 and generate significant increases in gross value added to the UK economy
- Currently working with DECC to prioritise these programmes for the CSR and the LCICG Strategy

TINA programme spend by technology area



We **identify, incubate and invest** in the best start-ups to fast track their commercialisation



- **We help corporates and governments to create and deliver options** they wouldn't otherwise have
- **Unrivalled access to cleantech dealflow**
- **Proprietary diagnostic tool** assesses the start-up and identifies its needs
- **Customised package** of support for start-ups:
 - Investment
 - Incubation services
- **Successes include:**
 - **Artemis** (hydraulic transmission) was recently sold to Mitsubishi as a cornerstone of their offshore wind strategy

\$5m
Partnership



3,500
Start-ups assessed

€130m
Invested within a
year of our support

13 to 1
Private investment
leveraged



We **create new ventures** to develop proprietary technologies from an early stage



➤ **We find world-leading research and design new ventures to create commercial value**

➤ **Future Blends** (pyrolysis derived biofuel)

- Drop-in biofuel from biomass waste
- Lowest cost and lowest carbon route



➤ **Eight19** (organic photovoltaics)

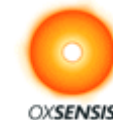
- Built on world-leading plastic electronics research at University of Cambridge
- €5m last investment round included French chemical giant, Rhodia





Investments: using our expertise to analyse and price risk in early stage venture capital investment

- Support growth of innovative, low-carbon businesses with strong commercial potential
- Catalyse private sector investors and generate attractive ROI
- Since our inception we have invested in 25 companies:
 - £250,000 to £3 million invested per company
 - £26.9 million invested to date
 - £143 million of private funding leveraged



Venture Capital – Early Stage Cleantech

› Energy efficiency



Replacing fossil fuel megawatts with on-demand “negawatts”



Advanced sensors to optimise turbine engine efficiency



Passive cooling technology for data centres and telephony base stations



Energy management for data centres and high performance computing



Efficient power integrated circuits for power chargers



Software for home energy management

Venture Capital – Early Stage Cleantech

› Renewables and biofuels



Fuel cells or the automotive industry



Bio-butanol via non-edible feedstocks



Wave energy generation

Venture Capital – Early Stage Cleantech

› Sustainability



Chain of custody tracking for commodities, particularly forest products and biofuels



Biopolymers for sustainable plastics

› Waste to energy

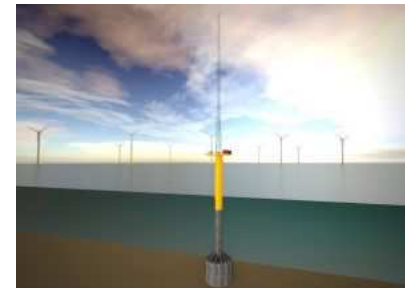


Converting organic waste to compost and renewable energy

We **convene consortia** to develop technologies corporates need but don't want to own



- **We know how to bring industry together to collaborate**
- **Offshore wind accelerator** (reducing costs by 10%)
 - Nine partners have 77% (36GW) of licensed capacity in UK waters
 - Cost-effective for partners: £12 invested for every £1 they spend
 - Novel foundations selected and de-risked. Universal Foundation (suction bucket) recently installed at Dogger Bank.
- **Industrial Energy Efficiency Accelerator** (step-change reductions)
 - Convened over 100 companies in 12 sectors including dairies, asphalt and bricks
 - 30% reduction in energy costs on average



We run **demonstration programmes** to test the viability of emerging technologies



➤ **Micro-CHP**

- 100+ units; comparison with condensing boilers
- Identified potential savings and priority markets



➤ **Advanced metering**

- Assessed cost-benefit of half hourly metering for SMEs through 500 installations
- Now mandated by UK government



➤ **Marine renewables proving fund**

- £22.5m to deploy full-scale wave/tidal devices
- Two devices already generating energy in the water



Joint Ventures



- › Develops onshore wind projects principally on land owned by public sector
- › Key clients: Forestry Commission Scotland, Ministry of Justice, Environment Agency, Local Authorities
- › Team of 20 people
- › JV partners: InfraRed Capital Partners, OPTrust

Joint Ventures



- High energy-efficiency office refurbishments coupled with low carbon in-use by occupiers
- JV partners: Threadneedle Asset Managers, Stanhope plc
- LCW Limited, a wholly-owned subsidiary of the Carbon Trust, is the Carbon Advisor to the LCW Fund and earns fees for its efforts
- Separately, CTEL owns units in the LCW Fund