#WESAC19

wave energy SCOTLAND

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

Renewable Risk Advisers

Insuring Marine Renewables – rounding off the square pegs …

Michael Bullock, Renewable Risk Advisers
www.renewablerisk.com

wave energy SCOTLAND

Who are Renewable Risk Advisers?

- Specialist risk management and insurance manager / consultant focussed on project construction / operation risks;
- MRE Clients include Aqua Power Tech, Atlantis, Corpower, DP Energy, Meygen, Minesto, MPS, OceanPixel, QED Naval, SeaGen, Sea Power Ireland, and Wavepiston.

Surely insurance can wait?

- No – need to engage early at best of times;
- Now hard market after 10 yrs+ bad results;
- Higher premiums/excess, reduced cover;
- Many insurers closed/back to core classes;
- Early stage marine renewables not core;

> Some risks uninsurable or unaffordable.

What risks are we talking about?

Natural perils, Accidental damage & impact; Lost revenue; Damage/injury to third parties.

Mostly insurable with v good story, but revenue v tough

Defect; Performance; Availability; Machinery breakdown.

MAYBE given successful proving, sufficient data

Political risk; Breach of consent; Uninsured delay; Mis-siting etc.

NORMALLY UNINSURABLE

Is it really that risky?

Real life MRE issues (1)

- Damage to survey equipment / ADCP's;
- Defective workmanship;
- Poor installation methodology;
- Damage / loss in transit;
- Tier 1 supplier equipment not optimised for project;
- Time pressures > use of tight weather windows, delays;
- Poor contractor communications with MWS;
- High cost of unscheduled marine ops;
- Cable damage during and post-installation and repair;
- Cable damage by third parties;

Real life MRE issues (2)

- DP vessels losing position;
- Risks of dry mate connectors and cable tails;
- Cable not designed for frequent handling;
- Impact by fishing boats, pleasure craft;
- Lack of onboard emergency measures (pumps etc.);
- Moorings dislodged in bad weather; Contractor disputes involving insurance claim monies;
- Lack of spares, repairs back to manufacturer for FAT;
- Low manufacturer priority for replacements;
- Generation bottlenecks (transformers, cables).

But surely Offshore Wind is insurable?

- Yes **but** proven and NB:
- 57 out of 60 European offshore wind construction projects had cable claims;
- Dynamic cables potentially enhanced risk;
- Average claim cost €25m;
- 65% of that claim cost from vessel costs;
- Premiums dependent inter alia on large OEM turbine warranties – more restricted on floating;

Mitigating factors (1)

- Design for worst case; accessibility, retrievability …;
- Protections: back-up power, pumps, trackers, warnings;
- Assess / address key points of weakness / failure …;
- Project planning and time and cost contingencies (cost of vessels for repairs?);
- Navigational Risk review from other marine users;
- Plan, protect and verify cable route;
- Project design issues e.g. re connectors, redundancy of cables, transformers (onshore?);

Mitigating factors (2)

- Notice to mariners, warning lights etc.;

NB Early Engagement with:

- TPV to assess survivability, moorings /cable design etc.;
- Experienced(!) contractors for installation plan;
- MWS to check methodology, tow plan, vessels …;
- Supplier SLA's for testing, spares and lead times;
- Insurance experts to overview and warm up interest.

Other observations

- Marine RE devices / sites high risk until proven;
- Devices near surface more exposed but may be cheaper to repair, and buoy-style more familiar;
- Cabling, or handling others' cables, riskier;
- Tows (especially long ones) worry insurers;
- Benefits of scale, standardisation, cost control;
- Self-insured deductibles will be meaningful(!);
- "Bankable" warranties significantly affect lifecycle insurance costs;

Sleeping soundly …

Prepare for all eventualities (especially involving cables), and insure those you can.

Michael Bullock
mjb@renewablerisk.com
+44 7584 572 070

Renewable Risk Advisers

Your Innovation Partner

The Oil & Gas Technology Centre

Your Innovation Partner

Roger Esson

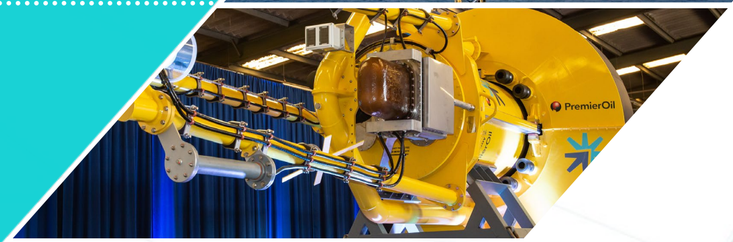
Decommissioning Solution Centre Manager

Our Goals

Unlock — Unlock the full potential of the UK Continental Shelf

Anchor — Anchor and grow a diversified cross-sector energy supply chain

Inspire — Inspire a culture of innovation to deliver net zero solutions



£180 million funding from the Aberdeen City Region Deal

Technology Vision

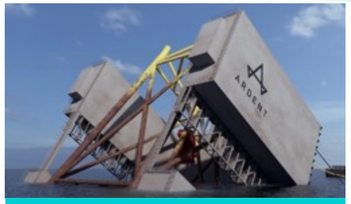
Fix today

Data access

Asset inspection

Production optimisation

Revitalise exploration



Efficient decommissioning

Alternative well barriers

Unlock potential

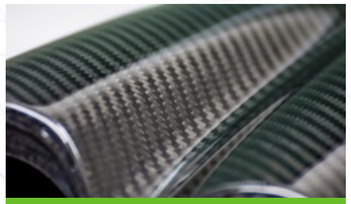
Tieback of the Future

Integrated energy

Automation

Remote operations

Artificial intelligence

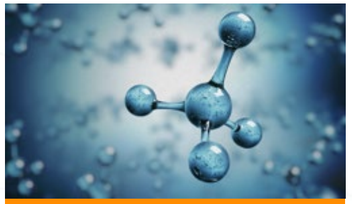


New materials

Transform tomorrow

Low carbon operations

Reusable infrastructure



Hydrogen delivery

Data driven

Unmanned facilities

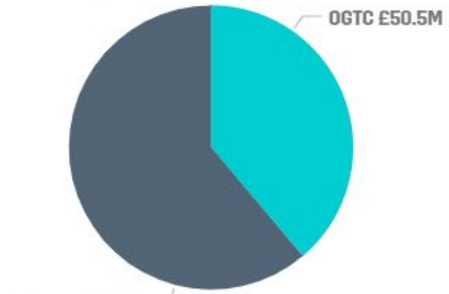
Zero carbon developments

Transforming the industry for the Net Zero future

Our Track Record

£130M Invested

Co-investing in industry-led projects to develop and deploy new technologies.

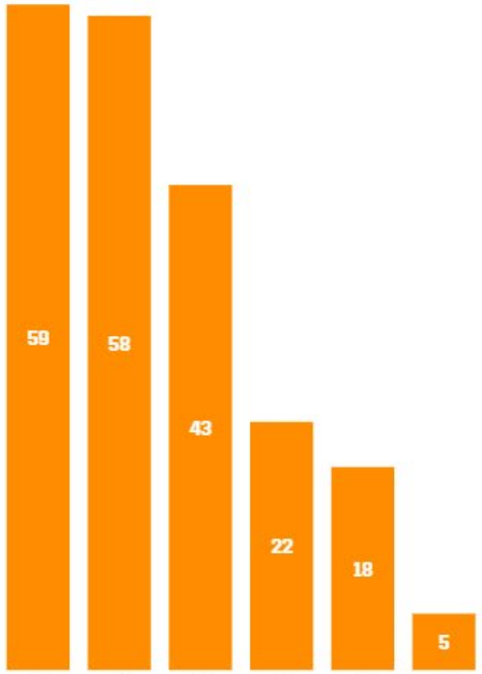


920+ Technologies Screened

Harnessing the power of an ever-expanding range of transformational new technologies.

205 Approved Projects

Delivering technology projects to fix today, maximise recovery and transform tomorrow.

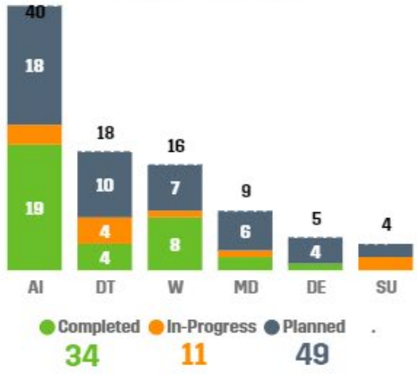


Memberships

126 Bringing together Operating, Supply chain and technology companies to drive innovative new solutions.

- **58** Operating company
- **26** Service company
- **38** Technology developers
- **4** Business Advisors

Field Trials



20+ TechX Startups

Accelerating innovation by helping a new generation of entrepreneurs take their technologies to market - faster.

307	applicants
2-3	ventures
46	countries
£1.2M	investment this year

Government Industry Schools Community

Visitors

20,100+

Creating a culture of innovation in the region through exciting events and workshops.

Delivering strong results

10-year Roadmap

	Solution Centres	TechX Accelerator	National R&D Centres	Culture of Innovation
Driving	Unlock UKCS potential & anchor the supply chain	Accelerate 100 new start-ups	Create at least two national R&D centres	Thought leadership for the industrial transition
	Add >£8bn value	Add >£2bn value	Increase R&D capability	Ready for the future
	Digital transformation Subsurface Decommissioning Wells Marginal developments Asset integrity Net Zero	15 new spin outs 50% commercialisation £100m co-investment syndicate	National Decommissioning Centre with the University of Aberdeen National Subsea Centre with Robert Gordon University Anchor the supply chain	Cross sector engagement Inspiring the next generation Industry and academic engagement

Solution Centres

Driving

Digital	Subsurface	Decom	Wells	Marginal Developments	Asset Integrity	Net Zero
10% increase in production efficiency	MER UK: add up to 20 bn barrels	35% cost reduction	50% lower well construction costs	50% marginal fields under development	50% cost reduction	Net Zero Basin
Digitally enabled supply chain	Discover more	Late life management	Optimise design	Tieback of the Future	Risk based inspection & data analytics	Net zero emission offshore O&G operations
Digital & data architecture	Develop more	Post COP OPEX reduction	Flawless delivery	Facility of the Future	Detection & condition based monitoring	Hydrogen production
Smart facilities	Recover more	Innovative removal	Maximise production	Integrated energy	Enhanced inspection techniques	CO2 capture technology
Digitally enabled worker		Optimise abandonment	Optimise abandonment		Repair & mitigation solutions	H2 & CO2 transportation & storage technology
Production optimisation						

Delivering solutions to industry challenges

Decommissioning Roadmap 2019 -2028
Overall Goal: 35% decom cost reduction

The Oil & Gas Technology Centre
Your Innovation Partner

Focus area		Short-term	Medium-term	Long-term	TLB
Late Life Management 10% of overall cost reduction This is about changing the way we manage infrastructure that is beyond its design life to maximise economic recovery and optimize decommissioning enabling a circular economy.	Automated operations	Optimise and standardise late life maintenance of critical items for decom	Automate monitoring and maintenance of critical items to decommissioning	AI assisted late life management.	Slash decommissioning costs Efficient offshore operations
	Digitalisation and Simulation	Digital platform development and data gathering Extend life	Decommissioning Simulation .	AI assisted decommissioning management Fully automate late life and decommissioning management	
	Remote monitoring Residual Liability	Digital platform development and data gathering	Autonomous remote surveying of marine environment	AI enabled seabed survey, monitoring & reporting	
Post COP OPEX Reduction 20% of overall cost reduction This is about efficient execution pre cessation of production (CoP) to minimize or eliminating post CoPOPEX	De-Energising	Pre-CoPdecommissioning activities using digital transformation	Pre-CoP decommissioning activities reality		Slash decommissioning costs Clean offshore energy
	Power and Utilities	Alternatives to diesel power	Standardised Modular Utilities		
	Make Safe	Identify preservation technologies	Automated mothballing period		
Innovative Removal 20% of overall cost reduction This is about industrializing the process of decommissioning and transportation of offshore infrastructure	Topsides	Alternatives removal technique Surgical Piece Small	Other industries alternatives Innovative transportation	Decouple topsides and jacket removal Create and maintain the best decommissioning practices	Slash decommissioning costs
	Jackets and conductors	Current best techniques identification	Transform removal methods Innovative transportation	Optimise Cut / Lift / transport	
	Subsea	Alternatives removal technique Transform decommissioning methods	Standardise decom methods for oil and gas subsea removal and transportation.	Automation of subsea removal technologies Residual Liability	
Optimise Abandonment Value target– 35% of P&A costs This is about decommissioning our wells as safely, simply and cheaply as possible	Rigless P&A	Identify alternative barrier materials Existing barrier remediation	Alternative barrier verification Eliminate tubular removal	Remotely activated downhole barriers Dormant technology solutions	Slash decommissioning costs
	Decision making	Improve flow path modelling Enable multi-string logging	Optimise schedule and sequencing		

Clean energy during late life and decommissioning
Produce off the shelf modular utilities to be utilized during the pre-removal phase.

Projects

Active	Completed
36	11

Project Investment

OGTC	INDUSTRY
£10.02m	£17.13m

Field Trials

Planned	Completed
4	2

Technology Vision

Fix today	Maximise recovery	Transform Tomorrow
54%	29%	17%

Solution Centres : **Decommissioning Projects**

C-Beaver Accelerated Corrosion Phase 1	Ardent Jacket Buoyancy Recovery	Subsea Skip Study	Decom Cost Optimisation	RLWI Deployment on a MODU	Thermite Plug	Tubing Compaction	Tubing Former	BiSN Well Lock M2M STC	Multi-barrier wellbore integrity inspection system	Magnetic Cement & Annular Test Phase 1
Sealand Study on SDS	Subsea Laser Cutting	Software portal for the supply chain	Tag and track radioactive waste	Vessel Based Life Support	Piece Small Removal Study	Ambient Lifter	Heavy Lift Vessel Availability Study	Single Phase Tubular Removal	Platform Power Hubs	Offshore Platform Lifting
Suspended Wells Monitoring	Technologically Enabled Frontline Workforce Assistance	Casing Removal Technology	Wel-Lok M2M STC Sealing	Flow Prediction for P&A	Bio-Grout Barrier	Energetics based tubing cutter	Thermic Lance	Casing Recovery System	Magnetic Cement & Annular Test Phase 2	Fusion Barrier
Decommissioning Simulator	Power/ Comms Buoy	C-Beaver Accelerated Corrosion Phase 2								

- Decom
- Wells
- Marginal Developments

Industrial Transition

A cleaner industry

Decarbonise operations

Net zero carbon basin

Integrated energy

Global net zero

Our contribution

Working across the energy sector to be part of the solution

Net Zero Roadmap V3

Net zero basin				
Net Zero UK Economy enabled by the UK Continental Shelf Industries, including Oil & Gas	Net Zero emission O&G Offshore Operations	Offshore Renewables Integration	Hydrogen production leveraging the O&G Industry	CCUS from industrial clusters and blue hydrogen production

Key Programmes timeline	by 2025	by 2035	by 2050
Net Zero emission O&G Offshore Operations	Plant Optimisation		
	Zero Emission Offshore Power		
	Venting and Flaring		
		Fugitive Emissions	
Net Zero Basin	Hydrogen Production		
	CO_2 Capture technology		
	Hydrogen and CO_2 transportation and Storage technology		

Carbon neutral basin developing, testing and exporting technology

Future of the North Sea

Vision 2035 production x today's oil & gas prices

CCC wind x £40/MWH

CCC H_2 x £2/kg

CCC CCS x £50/t

2020	£24Bn	£2Bn			£26Bn
2030	£20Bn	£5Bn	£1Bn	£2Bn	£28Bn
2040	£16Bn	£11Bn	£5Bn	£4Bn	£36Bn
2050	£11Bn	£16Bn	£13Bn	£9Bn	£49Bn

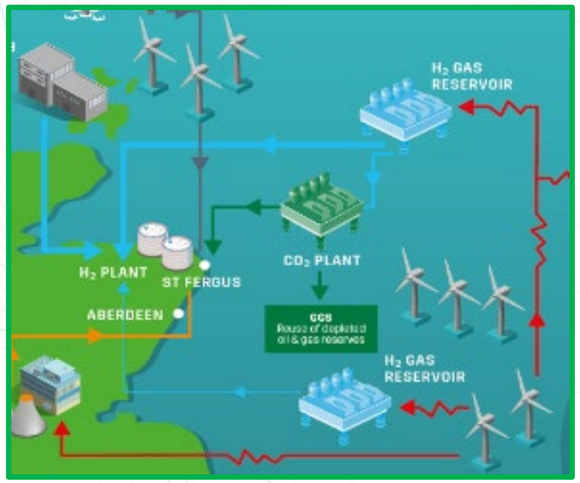
A Period of Transition – Opportunity for UK Supply Chain

A Period of Transition

Integrated Energy Vision for the North Sea

Oil and Gas Industry

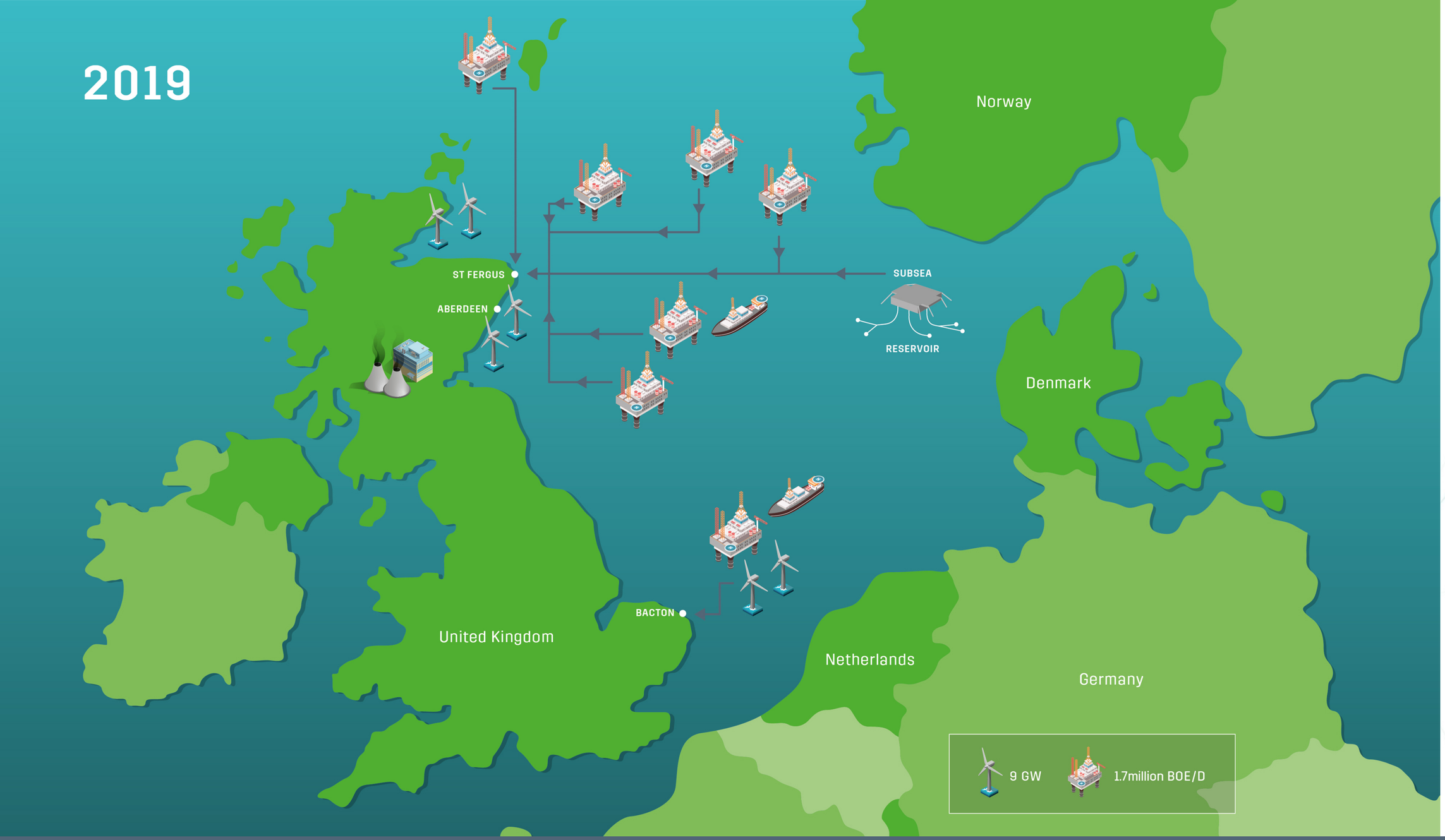
- A net zero emissions industry
- Powered by a north sea renewables grid
- Delivering a cost-effective CCUS connected to industrial clusters
- Enabling the renewables expansion
- Driving a blue hydrogen economy



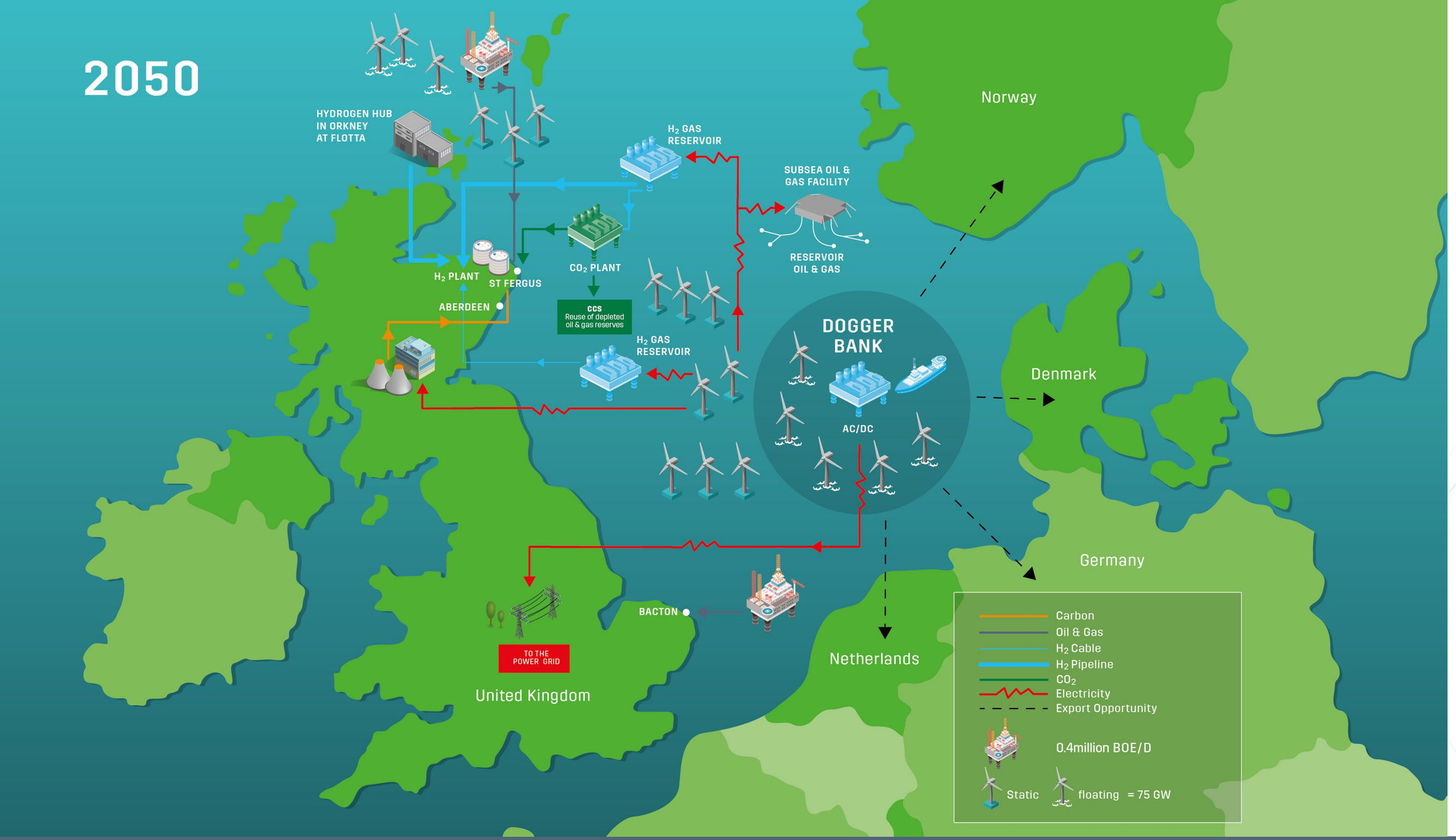
Renewables

- Expanded offshore wind industry x 7
- Enabled by a net zero oil and gas industry
- Creating an electrified North Sea
- Growing to support the hydrogen economy

Oil and gas industry enabling and partnering renewables


2019
Norway
ST FERGUS
ABERDEEN
SUBSEA
RESERVOIR
Denmark
BACTON
United Kingdom
Netherlands
Germany
9 GW
1.7million BOE/D

Energy 2019



Energy 2050 – A reimagined North Sea

Renewable Energy

Delivering

OPT Power Buoy

Providing real-time well and reservoir pressure, and temperature data for subsea asset integrity.

Power and control of subsea trees, local chemical injection skids and HPUs

Cost saving in decom £5 million per year

Integrated energy

EGOG subsea power hub

Ground breaking marine turbine technology for powering subsea wells

Lowers the lifecycle cost of subsea fields and reduces carbon footprint

Potential £200 million saving to UKCS

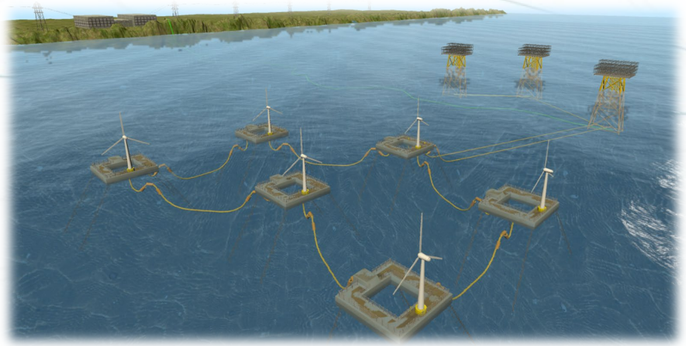
Integrated energy

Delivering projects that move the dial

How Can we Get There?

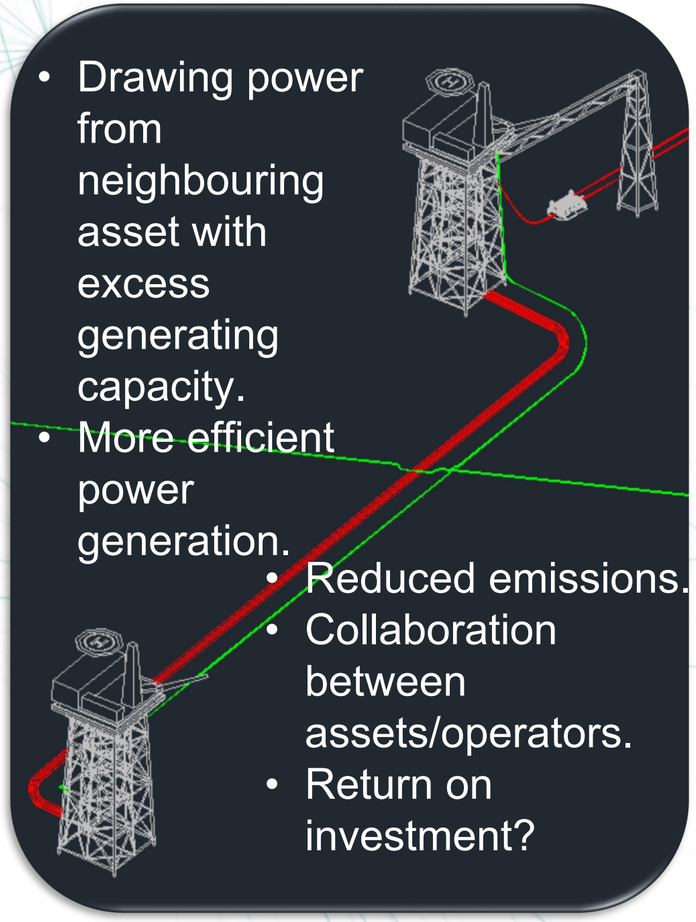
Core Element #1–Autonomous Power

- Providing all or some of the power requirements for an oil and gas asset(s) from renewable sources.
- Reduced emissions.
- Can this be cost competitive?

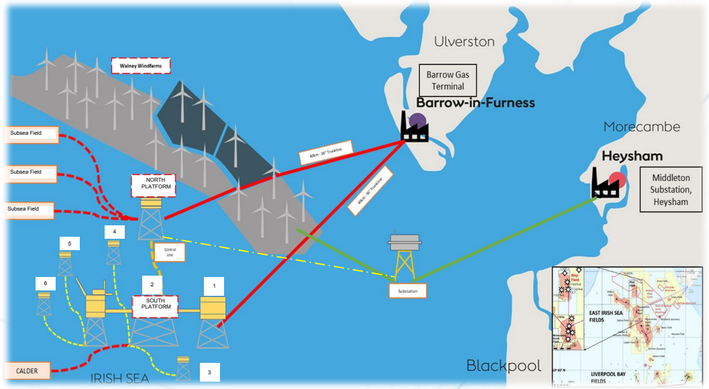


Core Element #2– Satellite Hub

- Drawing power from neighbouring asset with excess generating capacity.
- More efficient power generation.
- Reduced emissions.
- Collaboration between assets/operators.
- Return on investment?



Core Element #3– Integrated Hub



- Drawing power from existing offshore wind farms.
- Access to direct power from shore.
- Reducedemissions.
- Cross industry collaboration to reduce cost of power generation.

National R&D Centres

Partnering

With R&D institutions and innovation centres across the UK and internationally

Enhancing

The research R&D capability of universities and other organisations

Developing

New technologies that deliver for the UK and internationally

National Decommissioning Centre

The Oil & Gas Technology Centre
Your Innovation Partner

1495
UNIVERSITY OF ABERDEEN

Mature basin management

Well decommissioning

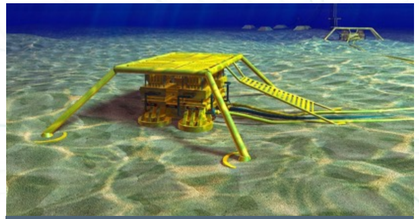
Late life and decommissioning

Thought leadership

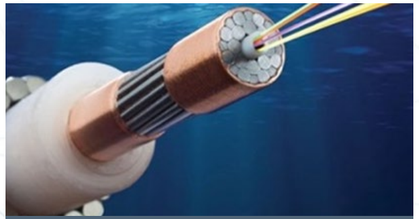
National Subsea Centre

The Oil & Gas Technology Centre
Your Innovation Partner

RGU ABERDEEN



Faster



Smarter

Cleaner

Cheaper

Industry -led R&D in partnership with academia

Simulation Suite

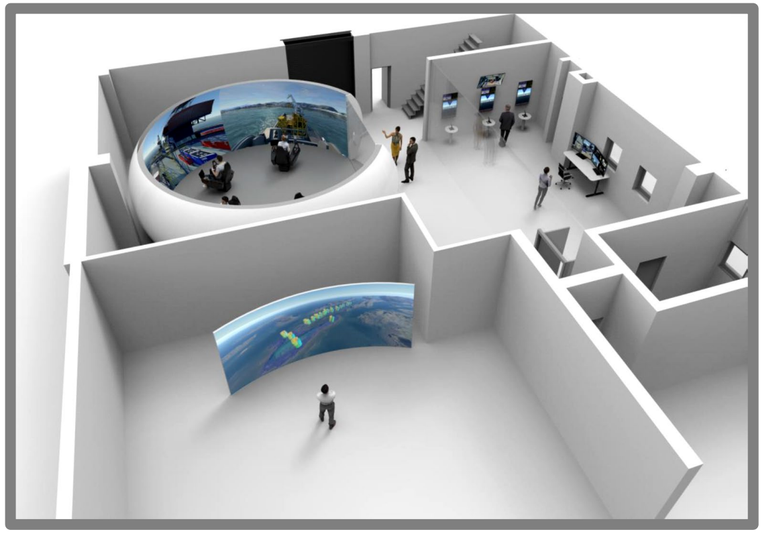
The National Decommissioning Centre
Innovation through Partnership

1495 University of Aberdeen

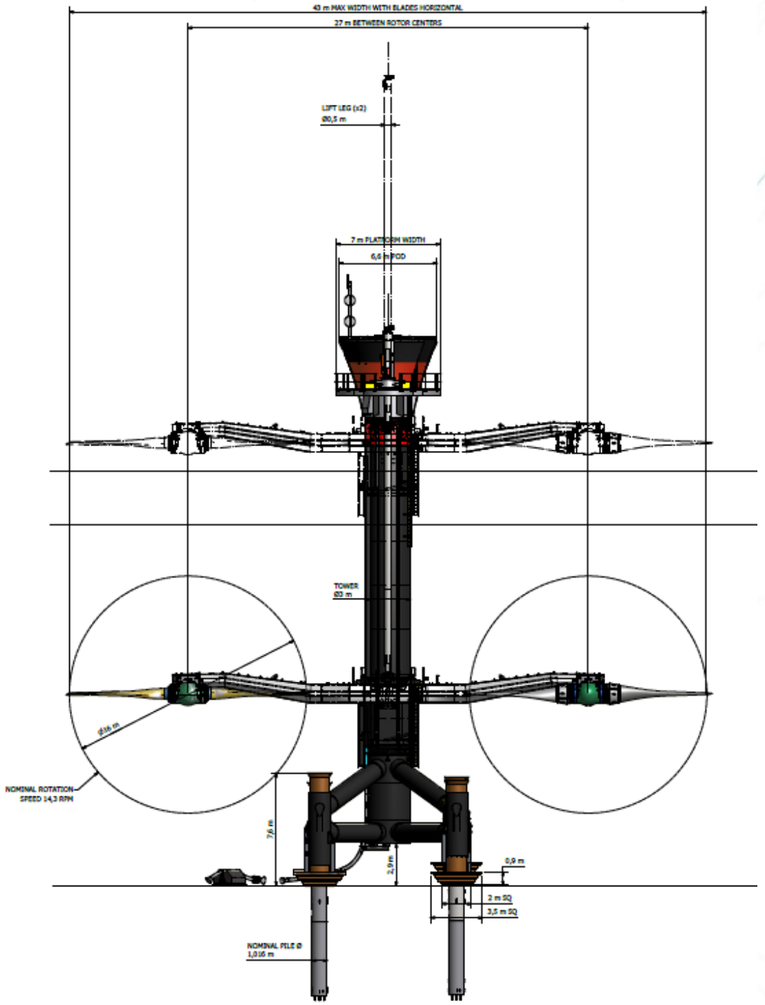
The Oil & Gas Technology Centre
Your Innovation Partner

Simulation Capabilities

- Real physics
- Real weather
- 300° immersive environment
- Virtual prototyping
- Scenario planning
- Operational planning
- Interaction with reality
- Smart basin visualisation
- Potential integration of structural RBFEA analysis
- Compelling visualisation of capabilities of new ideas



Decommissioning



Work with us

The Oil & Gas Technology Centre

Your Innovation Partner

Together we can transform the future

Raising investment in wave energy

05/12/2019 | Andrew Tipping, Commercialisation Manager

European Union
European Regional Development Fund

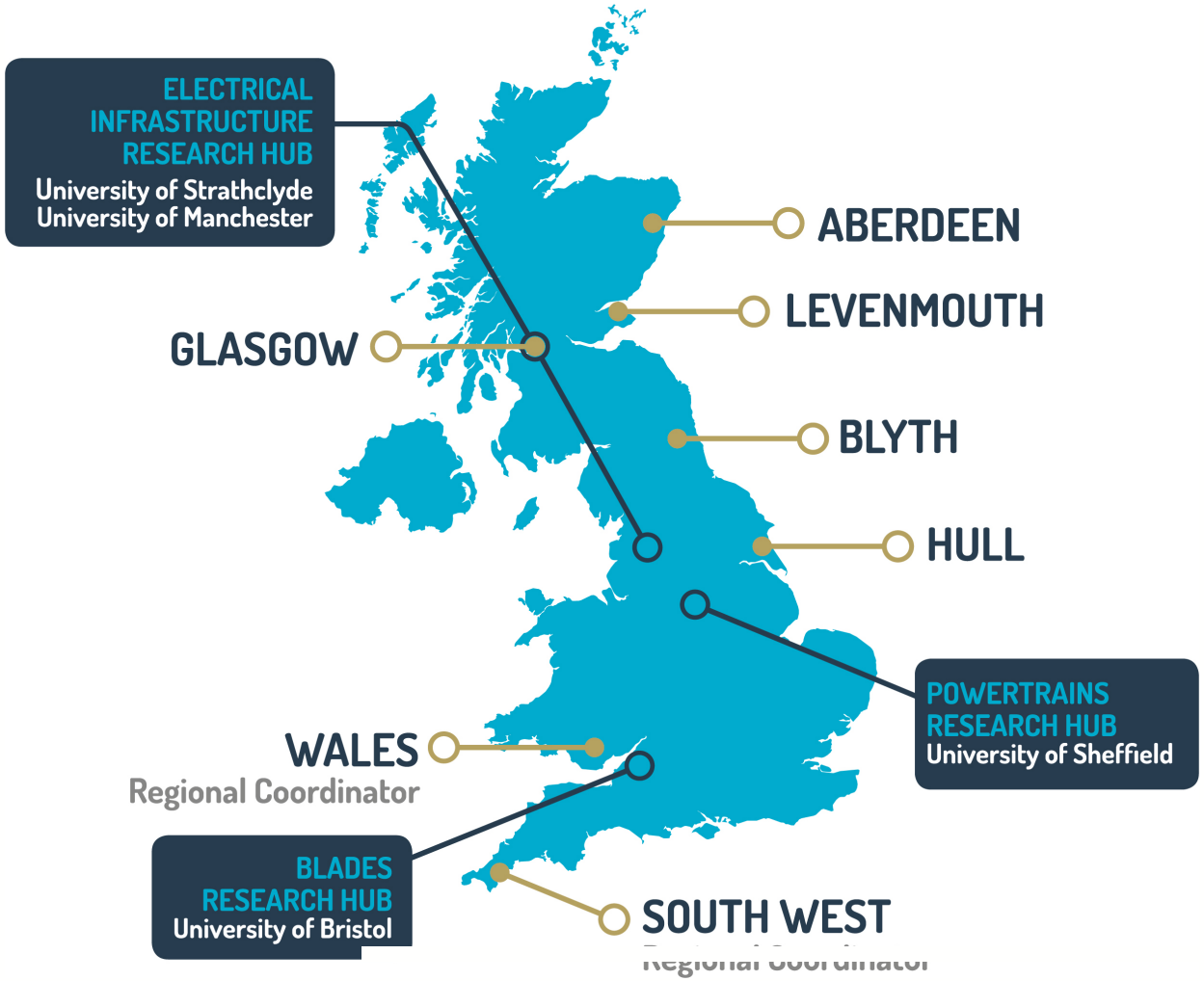
CATAPULT
Offshore Renewable Energy

Agenda

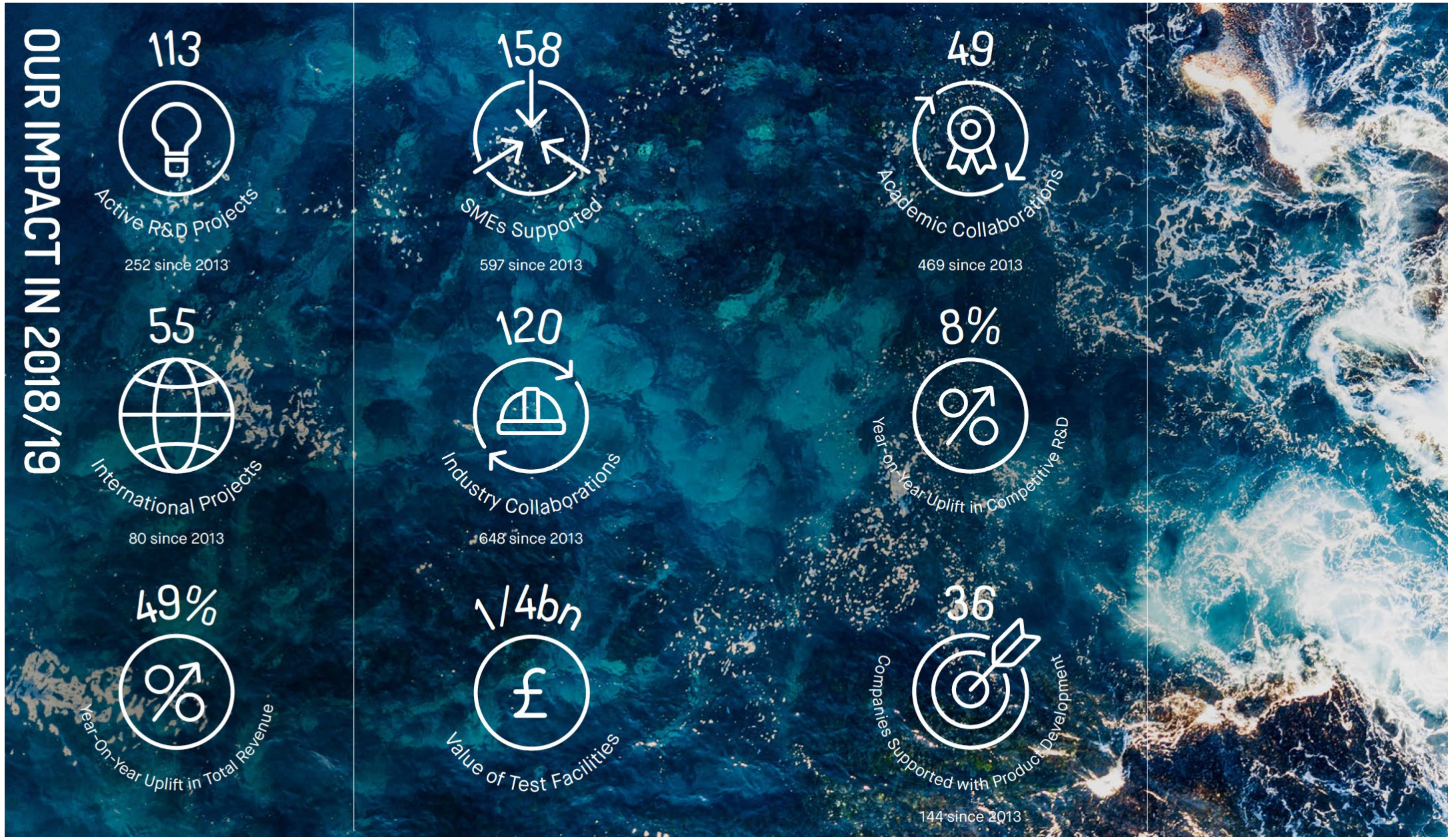
- Intro to ORE Catapult
- Commercialisation journey case studies
- Types of investor
- Investment process

ORE Catapult

Our Mission: *Accelerate the creation and growth of UK companies in the ORE sector*



Impact Stats 18/19



SME support offering

Research & Development & Innovation

"Helping companies develop their innovations through our expert knowledge, facilities and industry connections"

- Live innovation calls
- Insights & Analysis
- Collaborative R&D
- Test & Validation
- Academic Engagement

Commercialisation

"Helping companies launch new innovations into the market"

- Launch Academy
- Investor engagement
- Business case development
- Market entry information

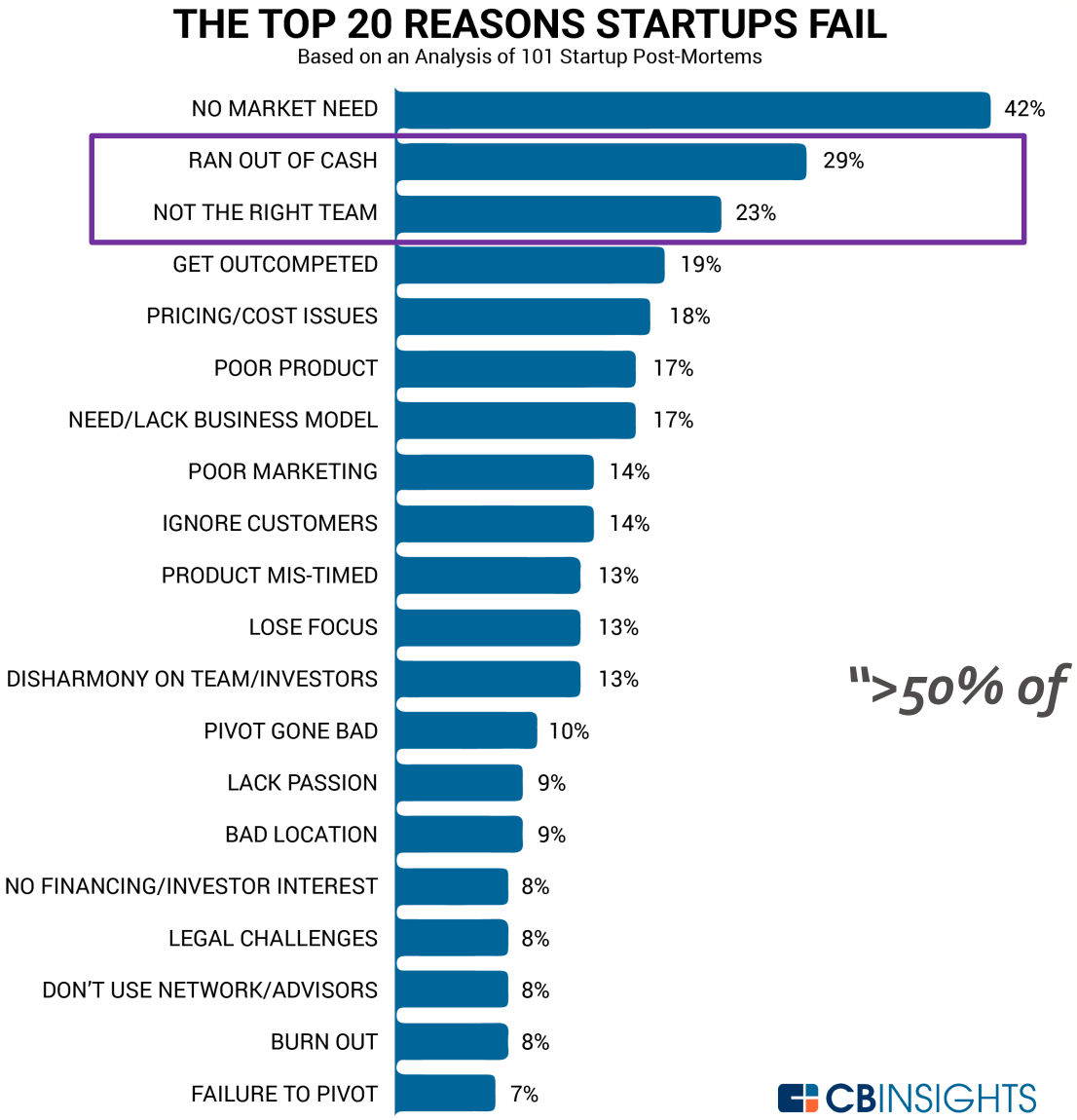
Supply chain development

"Helping companies to win work through improving competitiveness"

- Supply chain readiness (Fit4offshore)
- Improving competitiveness
- Diversification
- Export opportunities

Useful guide

Why start ups fail



">50% of start ups fail in the first four years"

Source: https://www.entrepreneur.com/article/307724

Commercialisation journey: ROVCO

Commercialisation Journey

- Innovation challenge winner
- Introduction to end users
- £1.44m Grants Secured with ORE Catapult and SPR as partners
- Trial in shallow water test facility
- Offshore trial planned Q1 2020
- Introduction to private investors
- £1.1m Seed
- Sold 13% share to Global Marine
- £5 million Series A
- £10m contracts secured this FY

The Launch Academy: Tech commercialisation programme

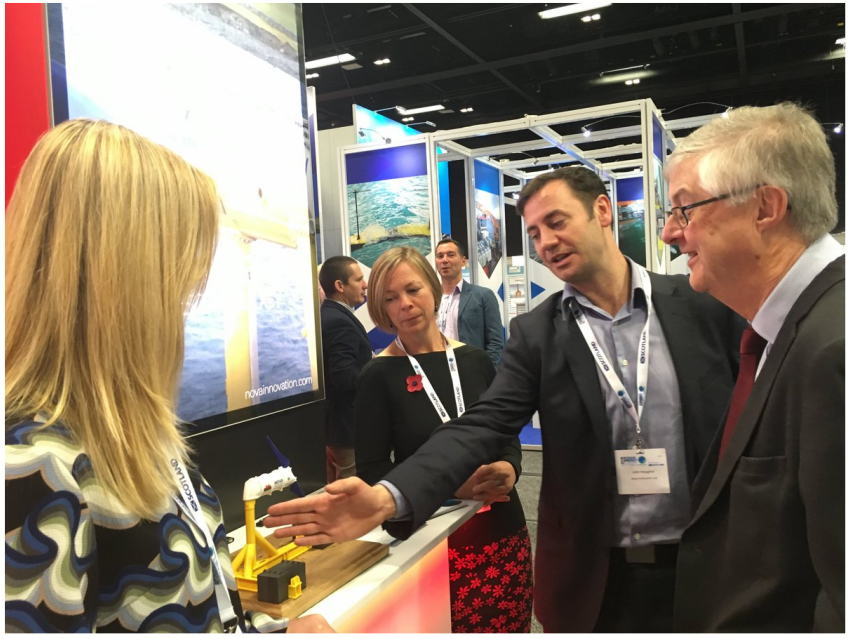
Partners:

SDIC Red Rock Power Limited · SIEMENS Gamesa · CATAPULT Offshore Renewable Energy · BARCLAYS · BDO · SHEPHERD+WEDDERBURN · GREEN ANGEL SYNDICATE

Investment options

Reasons for seeking investment

- Match fund an R&D grant
- Cost of capital equipment/ new premises as a barrier to growth
- ‘Burn rate’ as a barrier, unable to cash flow operating costs
- Huge risk on founders without external capital
- Can’t keep up with market demand – scale up
- Investment comes with expertise and experience



Investment stages

Seed
- £100k - £2m
- £1m - £4m valuations
- 10 – 30x ROI
- Pre revenue
- SEIS and EIS
- Market research/ product development

Series A
- £2 - £10m
- £4 - £15m valuations
- Established Revenue
- EIS available
- Scale up operations

Series B
- £5 - £10m
- £20 - £50m valuations
- 2x ROI
- Well established
- Build company

Series C
- £5 - £500m
- New product or markets

Business Maturity / Company turnover

Risk & anticipated ROI (Return on Investment)

Investment Avenues

Angel & Seed funds

- Early stage/ pre revenue
- £100k - £2m
- Seed & Series A
- Scalable 10 – 30x
- 30-40% return each yr.
- Money from members

VC

- Scale up established
- £500k - £20m
- Series A - C
- Money from LPs (pensions, corporates, insurance co's etc.)

Corporate Venture

- Early stage to scale up
- £500k+
- Seed, Series A-C & Acquisitions
- 50% Strategic focus
- Money from balance

Crowd + Other

90% EU Funding

- Crowdfunding often used to top up funding rounds
- Due diligence by lead investor
- Money from members
- Often more altruistic

Angel investors

High net worth individuals

- Attend pitches
- Decide on who they want to invest in and how much
- Support due diligence
- Occasionally join board of portfolio company

£

ROI

Angel Network

GREEN ANGEL SYNDICATE

SMART INVESTMENTS. SUSTAINABLE CHANGE.

- Sets up member syndicate
- Find opportunities
- Arrange pitch events
- Carry out Due Diligence
- Negotiate terms
- Invest in companies
- Manage investments
- Helps form boards of portfolio co's

£

Equity

Portfolio 10+

RAB MICROFLUIDICS

MF Masterfilter

Braendler Engineering

synaptec

ROVCO OCEAN INSIGHT

- Over 58% = no return / loss
- 32% = small return
- 10% = high return

Investment process

1: Pre-money valuation: How much are you worth?

1. Bill Payne Method (Scorecard valuation)

Find av. valuation in the region and compare:

- Strength of the Management Team (0–30%)
- Size of the Opportunity (0–25%)
- Product/Technology (0–15%)
- Competitive Environment (0–10%)
- Marketing/Sales Channels/Partnerships (0–10%)
- Need for Additional Investment (0–5%)
- Other (0–5%)

COMPARISON FACTOR	RANGE	TARGET COMPANY	FACTOR
Strength of Entrepreneur and Team	30% max	125%	0.3750
Size of the Opportunity	25% max	150%	0.3750
Product/Technology	15% max	100%	0.1500
Competitive Environment	10% max	75%	0.0750
Marketing/Sales/Partnerships	10% max	80%	0.0800
Need for Additional Investment	5% max	100%	0.0500
Other factors (great early customer feedback)	5% max	100%	0.0500
Sum			1.0750

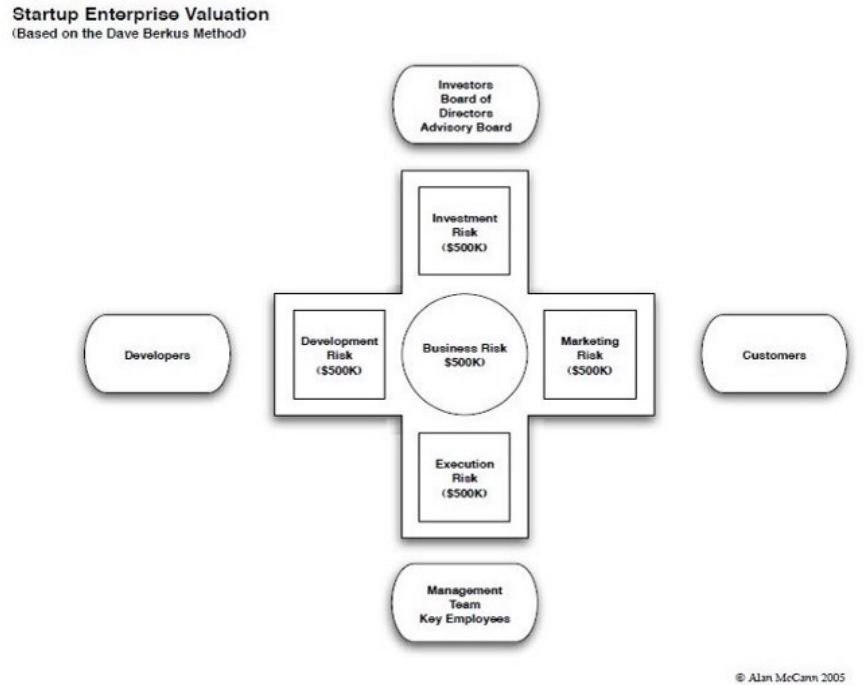
1.0750 x av. co. value = target co. value

3. The VC Method: Quantitative approach based on exit valuation working backwards

2. Berkus Method

5 Elements priced at a maximum of £500k

1. How attracted the buyer is (business risk)
2. Strength of the team
3. Marketing (customer buy in)
4. Strength of the board/ investors
5. Development risk



2: Courting an investor

1. Search for investor
- Strategic alignment
- Investment strategy
- Portfolio/ track record
- Additionality

2. Create Investor Summary (Company CV) & Pitch Deck
- Pre money valuation
- Investment required
- Technology/service outline
- Team
- Market Opportunity
- Traction (evidence)
- 5 year forecast
- Exit

3. Get a referral/ intro
- 3rd party validation is very helpful
- Investors see 100s of exec summaries

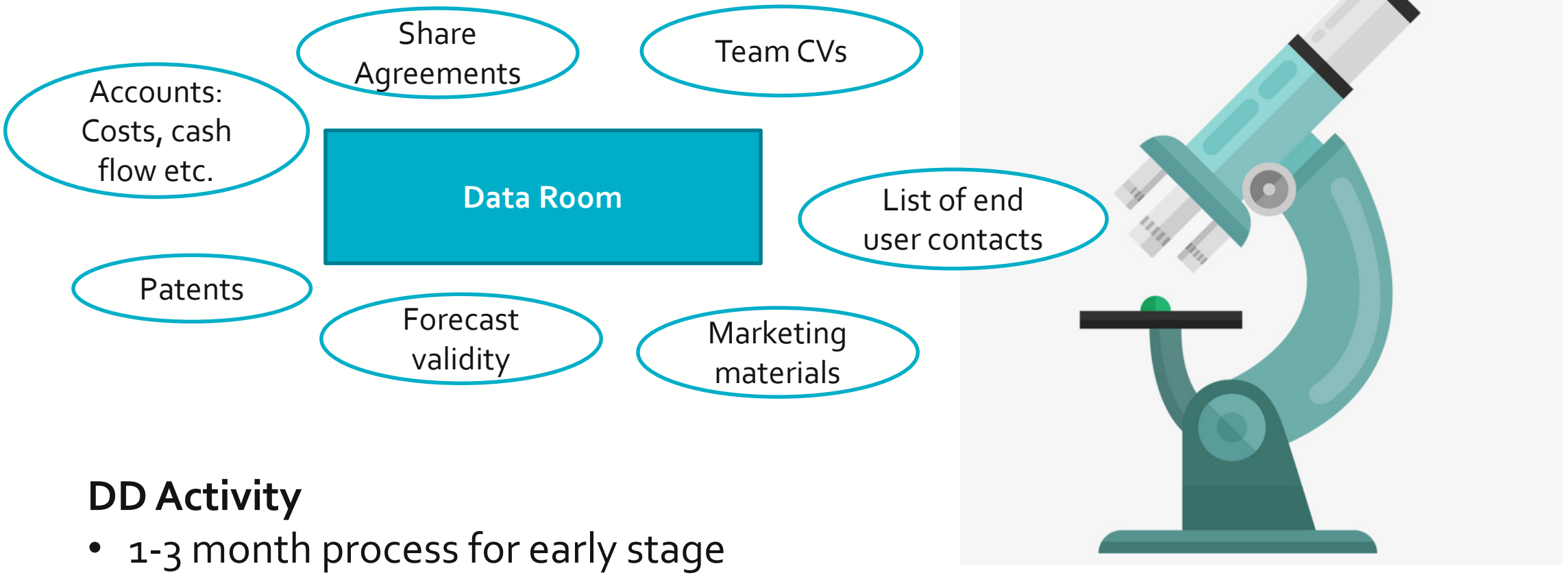
4. Pitch

- Pitch is open honest Q&A
- Early Stage Investments = Emotive process:
  "Often the end product is different to what is pitched"
- Pitch is different at each investment stage:
  Faith in the idea and team moving to track record as company matures.

3: Ticking the investors boxes

- SEIS or EIS eligibility
- USP
- Technology/ IP (is it defensible?)
- Market Opportunity & timeframes
- Competition
- Commercial traction
- Evidence of demand
- Financial Projections
- Valuation
- Exit Strategy

4: DD (Due Diligence)



DD Activity

- 1-3 month process for early stage
- Interview partners/ end users/ industry experts – assess validity of USP and commercial traction
- Negotiate share terms
- Review team credentials – assess gaps

5: What next?

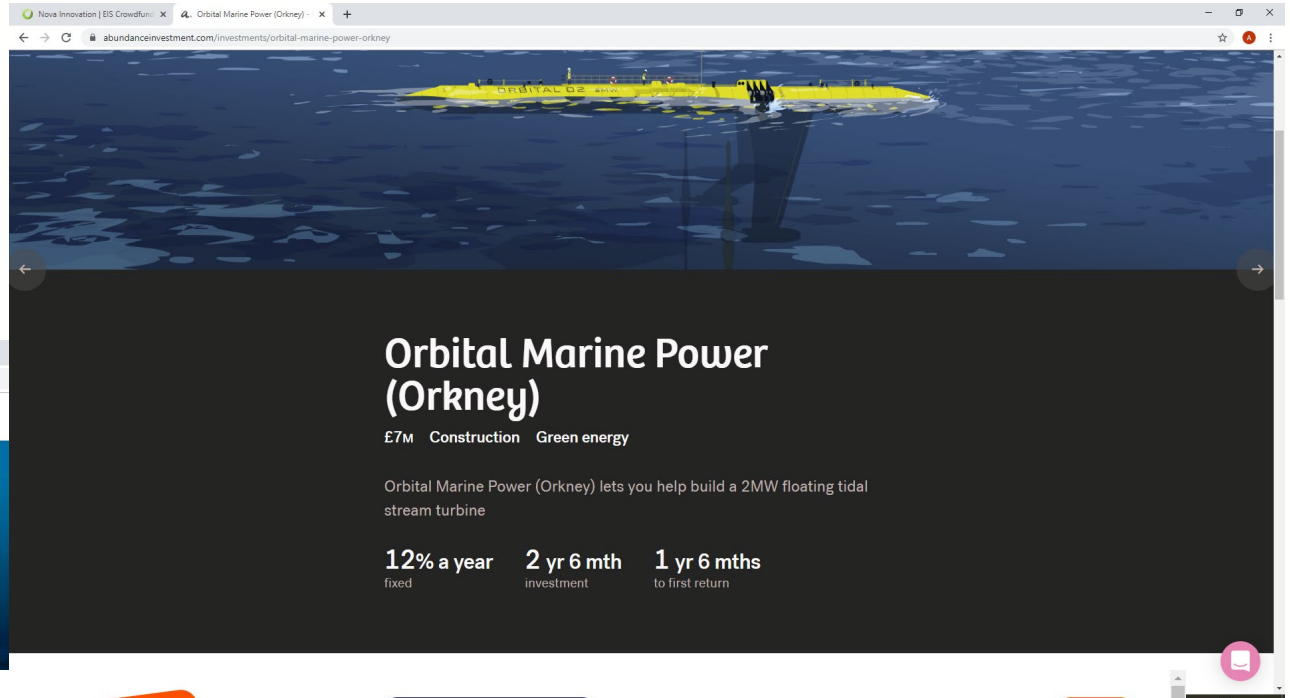
- Mentorship to grow the business
- Additional funding rounds
- Working towards Exit
- Make a return

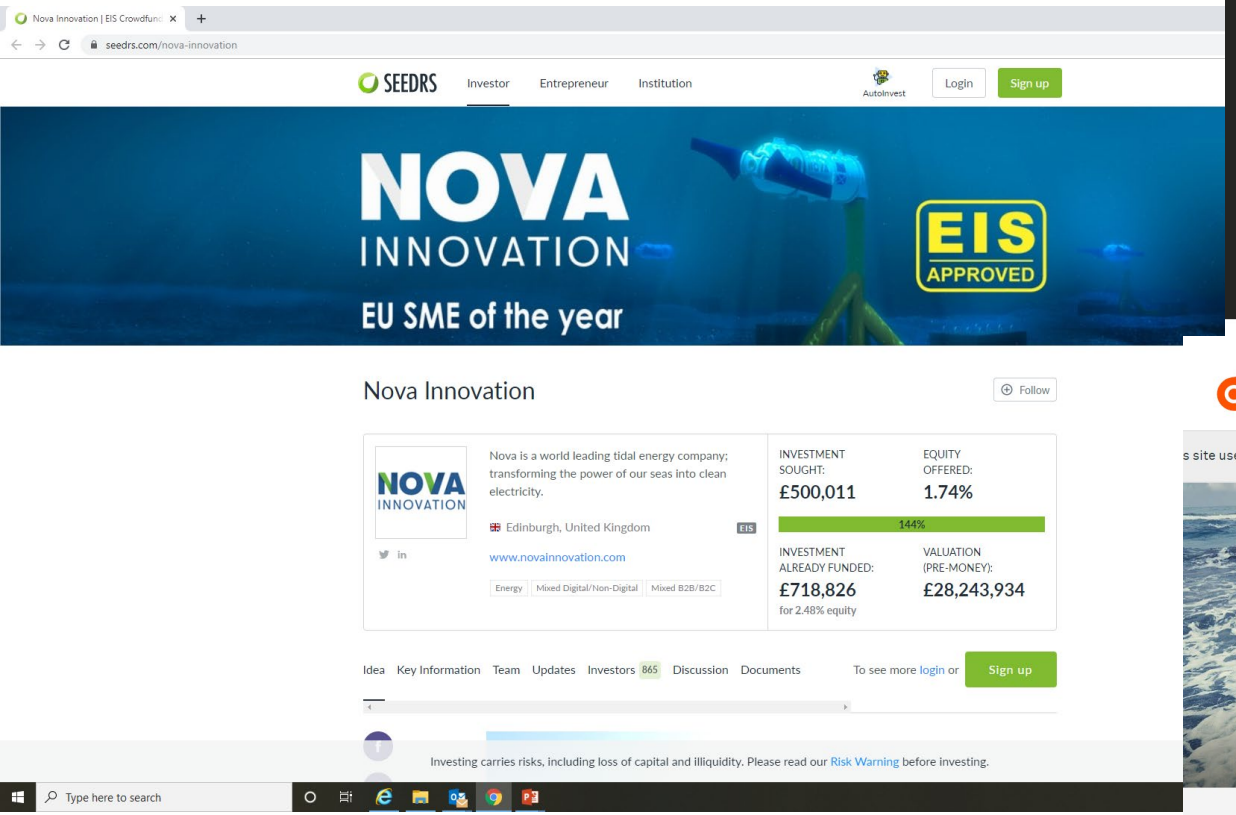
Challenges for Wave Energy

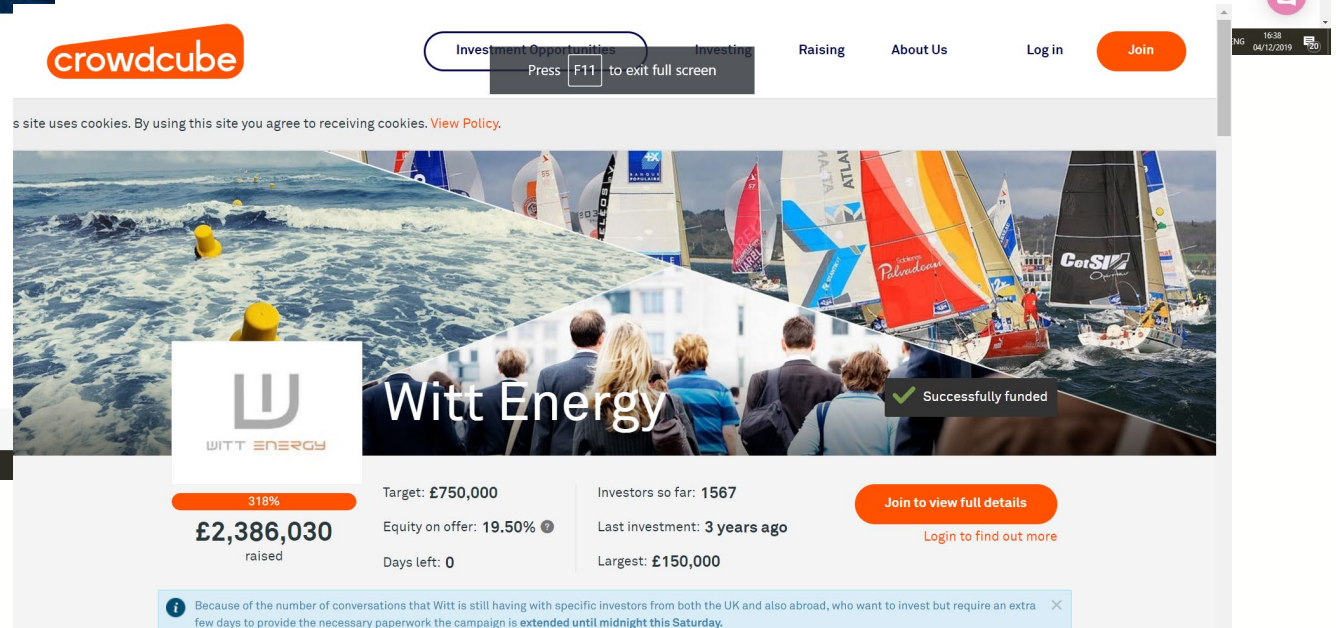
- Proving the Market Opportunity
- Technology risk perceived as high
- History of market failures
- Perceived long time to get to market
- Costs of hardware commercialisation higher than other investment opportunities

Advantages for Wave Energy

- It's an enabling technology
- It's clean tech
- The prize to be won is enormous







Current opportunity

Contact us

GLASGOW
Inovo
121 George Street
Glasgow
G1 1RD

T +44 (0)333 004 1400

BLYTH
National Renewable Energy Centre
Offshore House
Albert Street
Blyth, Northumberland
NE24 1LZ

T +44 (0)1670 359 555

LEVENMOUTH
Fife Renewables Innovation Centre (FRIC)
Ajax Way
Leven
KY8 3RS

T +44 (0)1670 359 555

HULL
O&M Centre of Excellence
Ergo Centre
Bridgehead Business Park
Meadow Road, Hessle
HU13 0GD

Securing your next stage of development:

PRIVATE SECTOR INVESTOR READINESS

Sheryl Daniels-Young

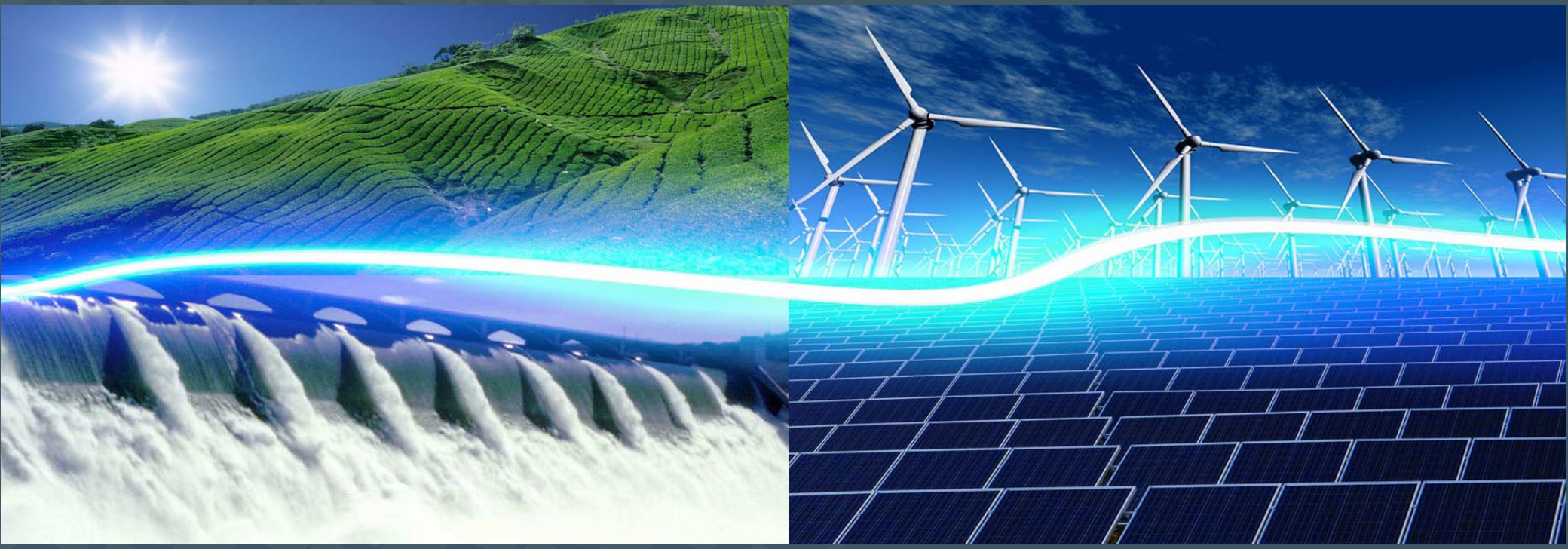
5 December 2019

via Host:

wave energy SCOTLAND

UK M: 07375 366 675
sy@montereyrenewable.com

MY BACKGROUND



CAREER HIGHLIGHTS – EARLY STAGE INVESTING

- MD and GP of Cross Atlantic Capital Partners where I served as:
  - Fund manager of over $200m in Venture Funds;
  - Made Series A investments in early stage tech companies;
  - Co-funded a seed investment incubator and worked with UK university tech transfer groups to fund emerging technologies.

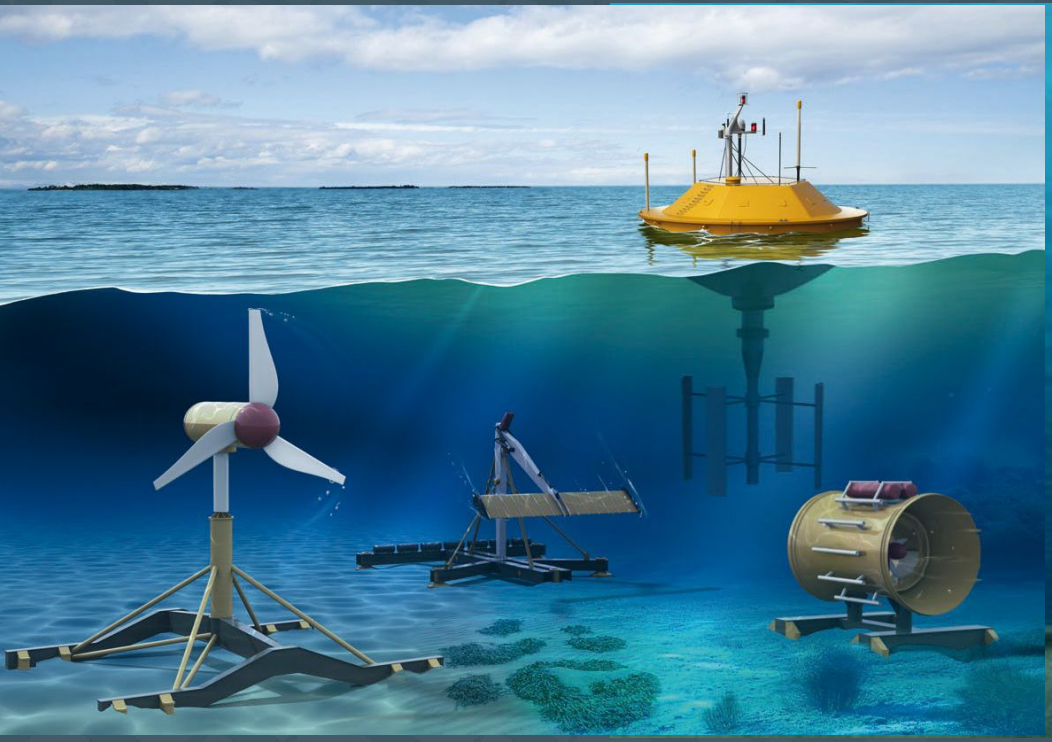
- Commercial Panel Advisory Member of BEIS Energy Entrepreneur's Fund to provide grant funding for emerging low carbon technologies.

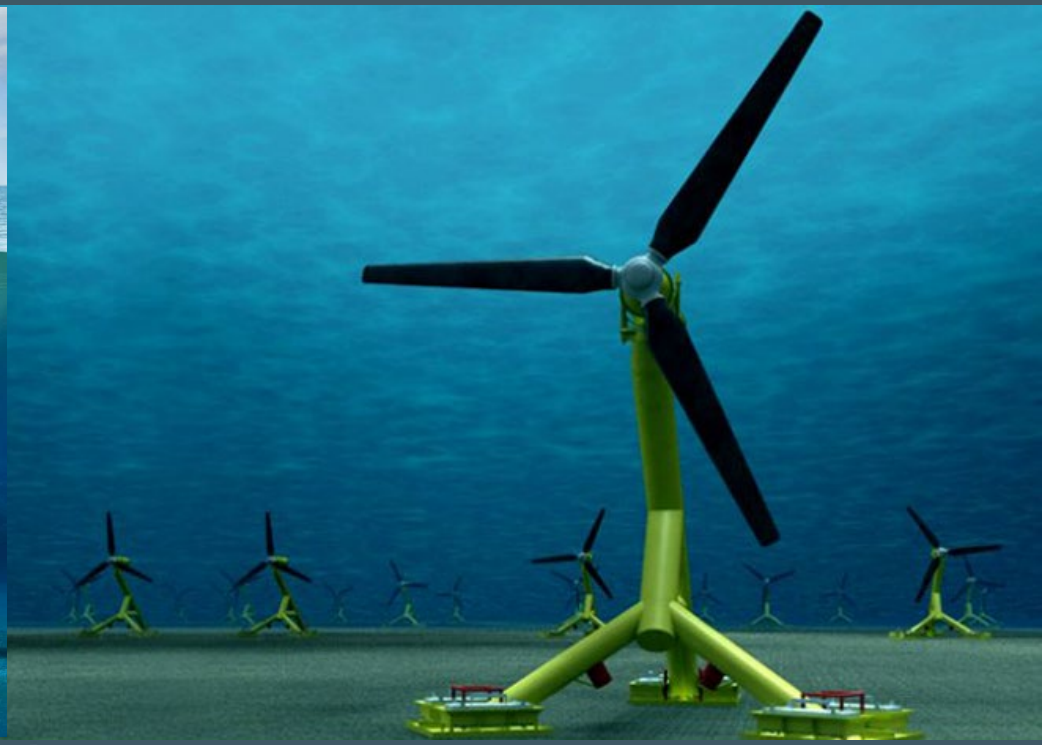
- FCA Regulated investment manager.

CAREER HIGHLIGHTS – COMMERCIALISATION

- Non-Executive Director of European Marine Energy Centre (EMEC) in Orkney, Scotland.
- Managing Director of Monterey Renewable, a private equity advisory group and fund, that is focused on early stage low carbon / renewable energy tech companies.
- Non-Executive Director of several private and public AIM listed UK technology companies in the growth and commercialization stage.
- CEO of a seed investment group that focused on R&D commercialisation from UK universities.

SECURING YOUR NEXT STAGE OF DEVELOPMENT





FOCUS FOR TODAY

❖Where you are now:

You have secured WES funding and have developed your technology.

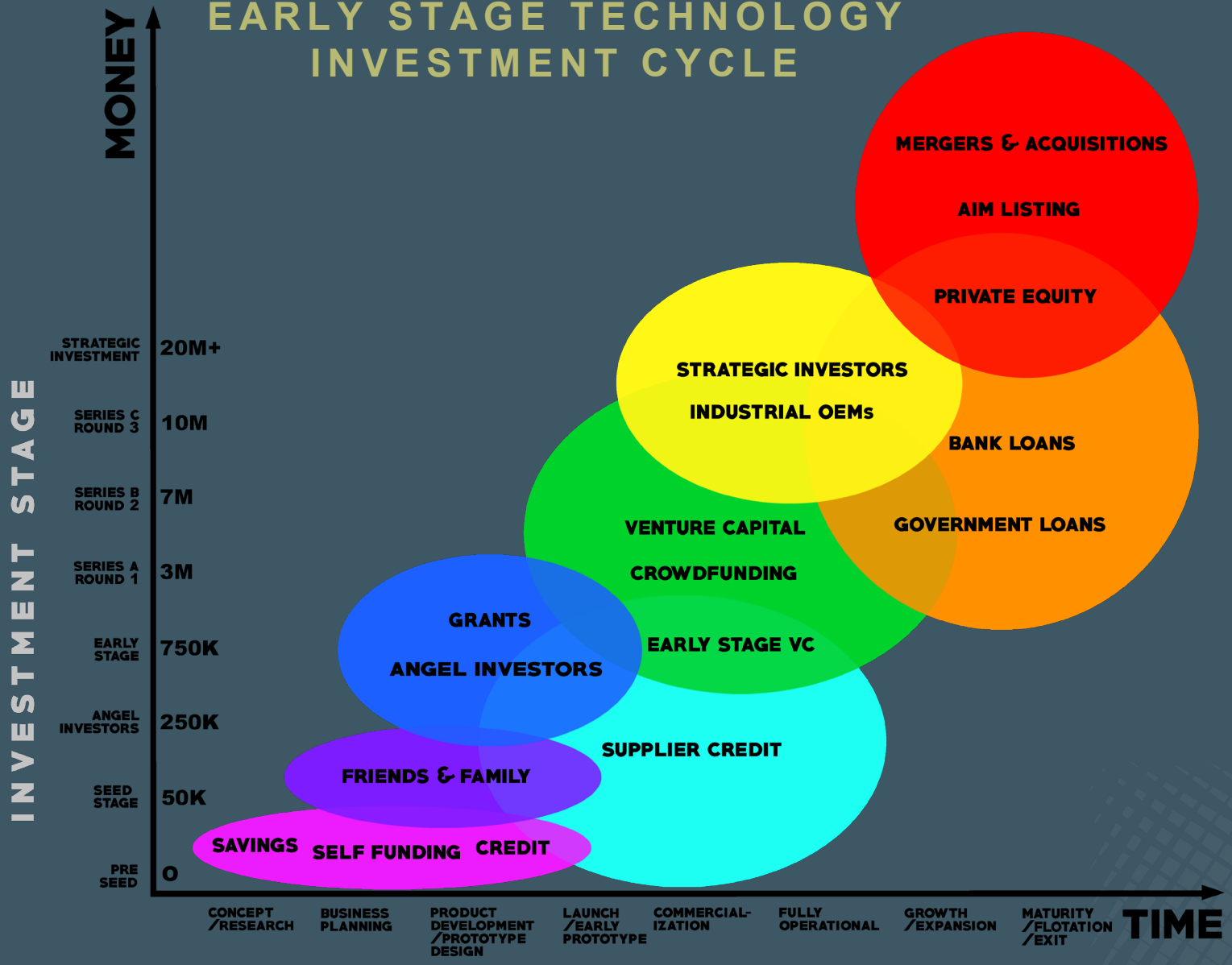
❖Your next stage of development:

Securing private sector investment and commercialising your technology…

So -

- *How do you get there?*
- *What do you need to do to be ready for private sector investment?*

EARLY STAGE TECHNOLOGY INVESTMENT CYCLE



START-UP DEVELOPMENT PHASE

PRIVATE SECTOR INVESTOR READINESS – WHAT WILL THEY FOCUS ON?

❖Technology & Differentiation:

- *How will you compete in the market?*

❖Revenue Projections:

- *Is there a level of comfort with your projections?*

❖Cash Burn rate:

- *How long will they need to invest in your company until you reach breakeven and profits?*

❖Risks of getting there:

- *What are the risks to you achieving your targets?*
- *Can your management step up to your upcoming commercial needs?*

❖Your Investor Ready Documents.

YOUR INVESTOR READINESS – TECHNOLOGY

❖Technology Differentiation:

- *How is your product/service differentiated from competitors' offerings?*

❖Scalability:

- *Is your technology scalable and what are the risks to scaling up?*

❖Supply Channel:

- *Can your suppliers scale up as needed?*
- *Are your manufacturers ready for you? (i.e. where are you in the queue?)*

❖Milestones:

- *Have you set identifiable and achievable benchmarks and milestones?*

YOUR INVESTOR READINESS – PROJECTED REVENUES

❖Target market:

- *Have you clearly identified your target market?*
- *Do you know who your customers will be?*

❖Predictability:

- *How secure or defensible is your target market/client base?*

❖Visibility to Revenues:

- *Do you have a pipeline of clients?*
- *Do you have contracts, PPAs or LOIs signed?*

- *If LOIs, how secure are they?*

❖Level of Comfort:

- *Are your projections reasonable and conservative with detailed assumptions documented?*

YOUR INVESTOR READINESS – BREAKEVEN / PROFITS

❖Key supplier contracts:

- *Do you have contracts signed with key suppliers of energy/materials/inputs to secure your cost estimates? (For example, a secure source of cheap electricity etc).*

❖Cost Controls:

- *Do you have the resources (people and systems) to ensure your costs are kept under control?*
- *Are your financial controls robust enough to give an investor peace of mind?*

❖ Investment Required:

- *Will the investment requested carry the company through to breakeven or will an additional fundraise be required?*

YOUR INVESTOR READINESS – MANAGEMENT

❖Senior Management:

- *Is your senior management team complete?*
- *Is your CEO 's skillset appropriate for your next stage of development?*
- *Do you have commercially minded CEO / CFO?*

❖Commercial management:

- *Does your senior management have the skills to:*
  - *bring in the commercial contracts,*
  - *manage the company's growth, and*
  - *communicate effectively with the investors?*

❖Board of Directors:

- *How robust and independent is your board?*
- *Are your board members' skillsets appropriate for your next stage of your development?*

YOUR INVESTOR READY DOCUMENTS

❖Teaser - a short (1-3 page) executive summary, non-confidential, that can be sent to obtain early interest.

❖Non-Disclosure Agreement.

❖Investment Memorandum that is 'investor ready':

A. Business Plan that includes:

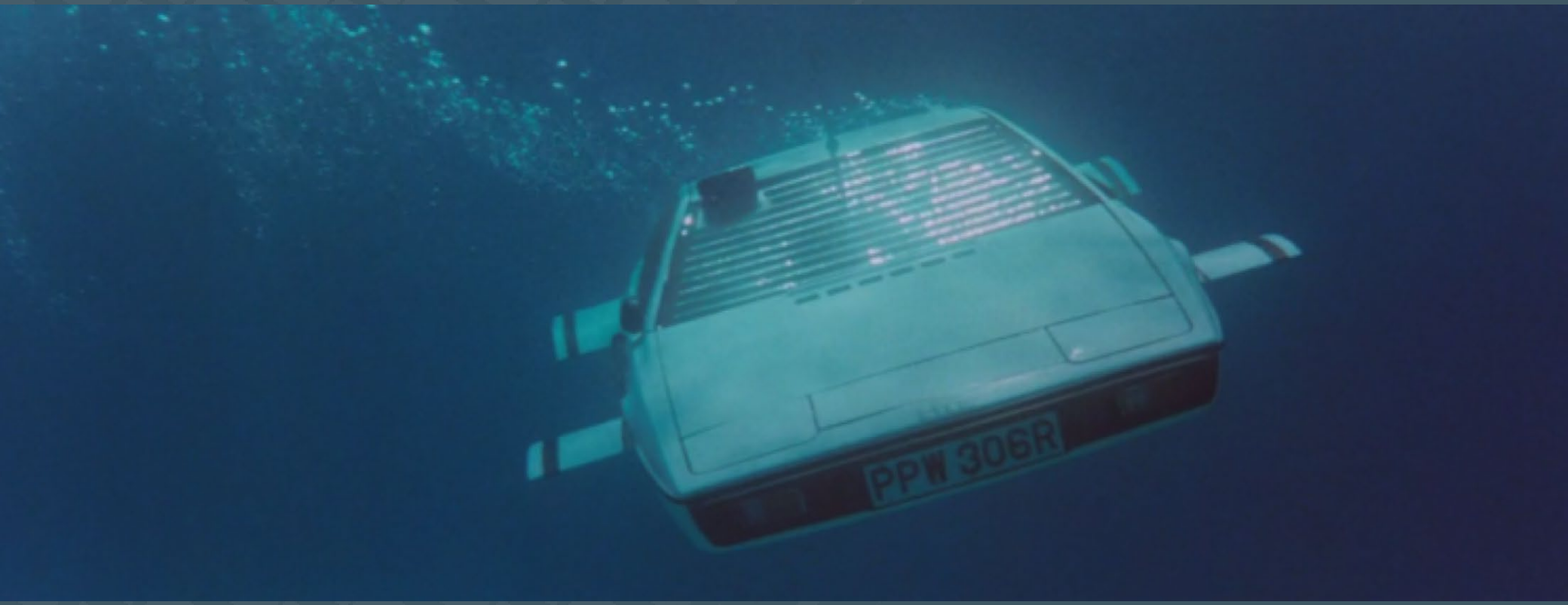
- *Your product/service offering and differentiators,*
- *Your business model and customers/how you will go to market,*
- *Financial pro forma for 4-5 years, by month, including detailed revenue model,*
- *A market analysis and your target market,*
- *Competitive analysis.*

B. Exit Options – may be difficult to assess at this point…

- *Each investor has an investment horizon, try to address it as best you can.*

C. Data Room with supporting due diligence information.

WHAT YOU SHOULD LOOK FOR IN YOUR NEXT INVESTOR…



INVESTOR READINESS – YOUR REQUIREMENTS

❖Are they an 'intelligent' investor?

- *What experience does the investor have in investing in companies similar to your company or product? (E.g., companies in the same stage of development, technology sector or your target market?)*

❖Is there an Extensive network?

- *Do they have an extensive commercial network with your potential customers or supplier network?*

❖Investor Director Representative:

- *Do they have an appropriate director for your board? (i.e., one that can add value with their experience, in mentoring senior management, or acting as an ally/sounding board?)*

SHERYL DANIELS-YOUNG
50 Brook Street, First Floor
Mayfair, London W1K 5DR
T: +44 208 123 3894
sy@montereyrenewable.com

IEA Technology Collaboration Programme
OCEAN ENERGY SYSTEMS

Henry Jeffrey
Chairman IEA OES

IEA Technology Collaboration Programmes

International Energy Agency

Energy Security

Environmental Protection

Economic Growth

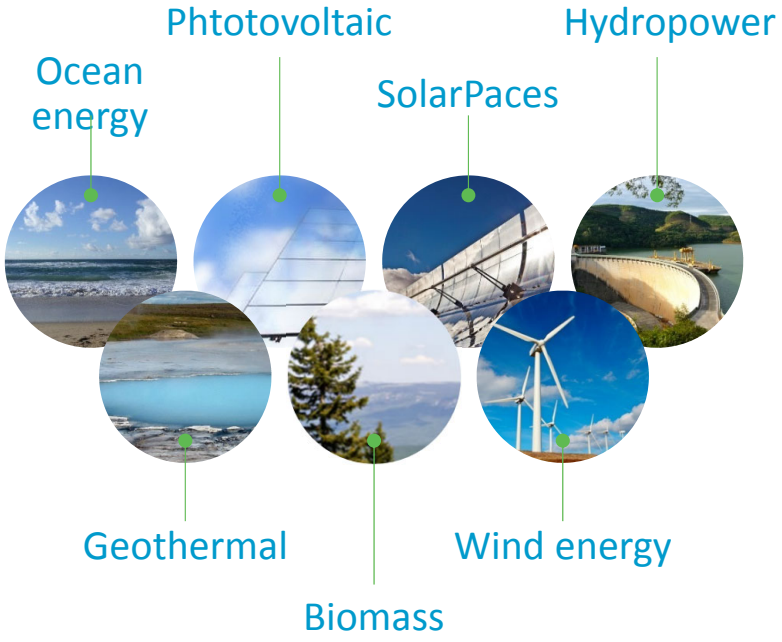
Engagement Worldwide

→ Governments and Industry benefit from sharing resources and accelerating results

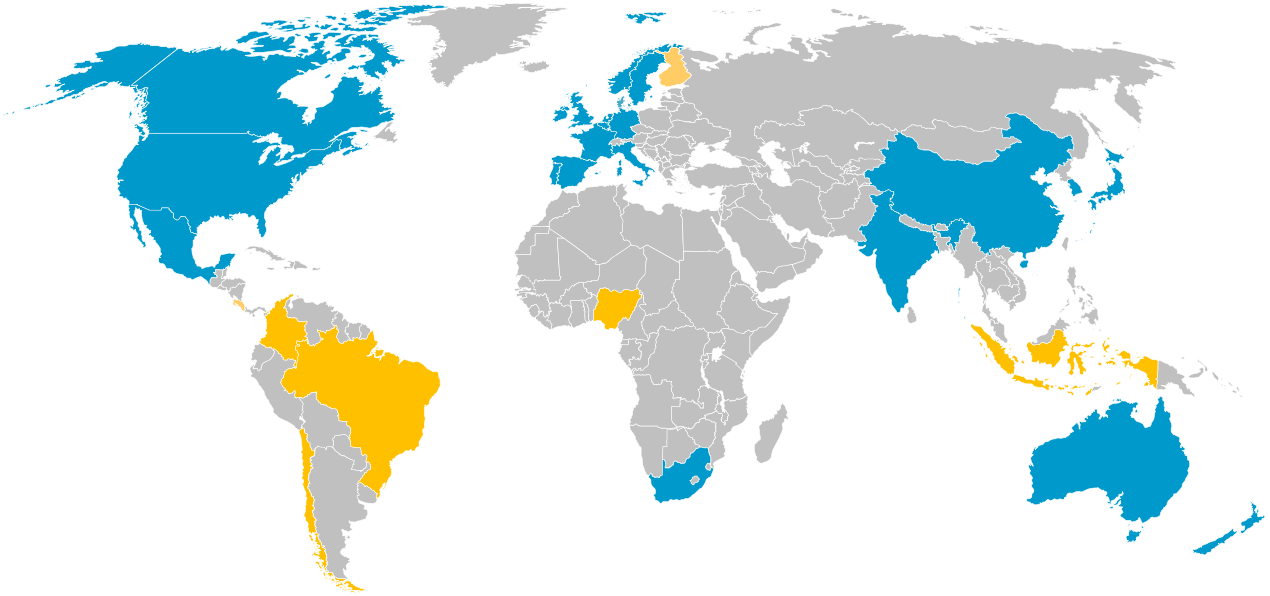
→ For this reason the IEA enables independent groups of experts – **IEA Technology Collaboration Programmes**

→ Over 40 groups working in the following areas:

- Efficient end-use technologies
- **Renewable energies**
- Fossil fuel
- Cross-cutting issues



Membership diversification



Member countries (24) + European Commission

Observers; countries invited to join

Diversified representation of interests in the ExCo

- GOVERNMENTAL DEPARTMENTS
- INDUSTRY ASSOCIATIONS
- UTILITIES
- ENERGY AGENCIES
- GOVERNMENTAL AGENCIES
- RESEARCH ORGANIZATIONS
- UNIVERSITIES

Task 7| International Levelised Cost of Energy for Ocean Energy Technologies

→ **OPERATING AGENT:** Tecnalia)

ACHIEVEMENTS

Thorough investigation of LCOE for wave, tidal and OTEC technologies; consistent methodology applied

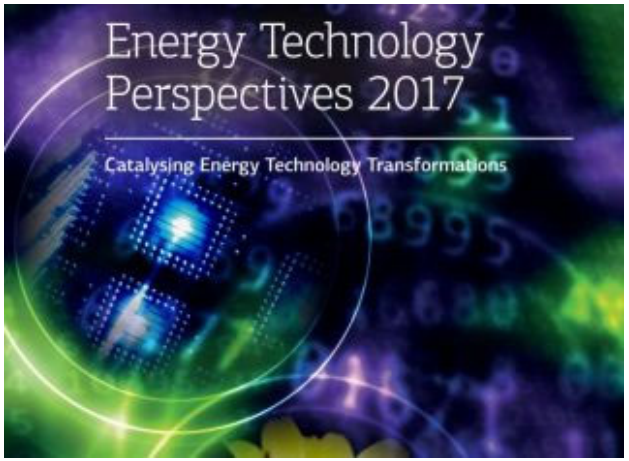
Cost reduction trajectories on an international level

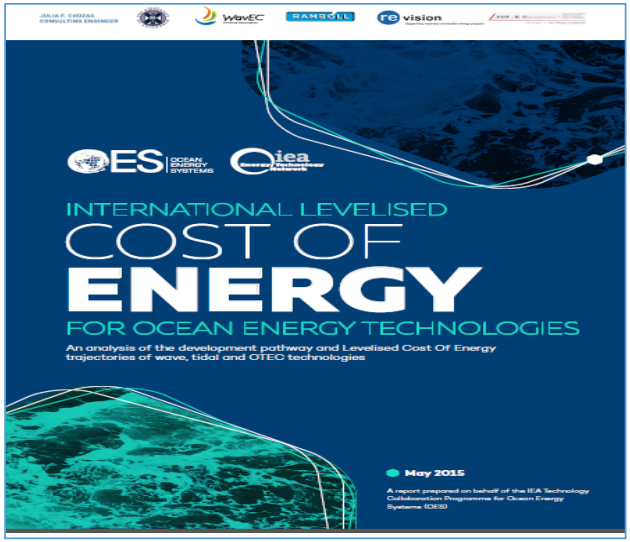
Industry consultation - development of revised cost models

High costs intrinsic to the early stage development of technology

Cost reduction trends: clear trajectory towards a more affordable LCOE

Costs in the long-term are expected to decrease from the first commercial project level as experience is gained with deployment





Task 10 | Wave Energy Converters Modelling verification and Validation

→ **OPERATING AGENT:** Ramboll (Denmark)

OBJECTIVES

To assess the accuracy and establish confidence in the use of numerical models

To validate existing computational modelling tools

To identify uncertainties related to simulation methodologies

To define future research and develop methods of verifying and validating the different types of models

Participants
- Canada
- China
- Denmark
- France
- Ireland
- Korea
- Norway
- Portugal
- Spain
- Sweden
- The Netherlands
- UK
- USA

Task 12 | Stage Gate Metrics on Ocean Energy

→ **OPERATING AGENT:** Wave Energy Scotland /EC

OBJECTIVES:

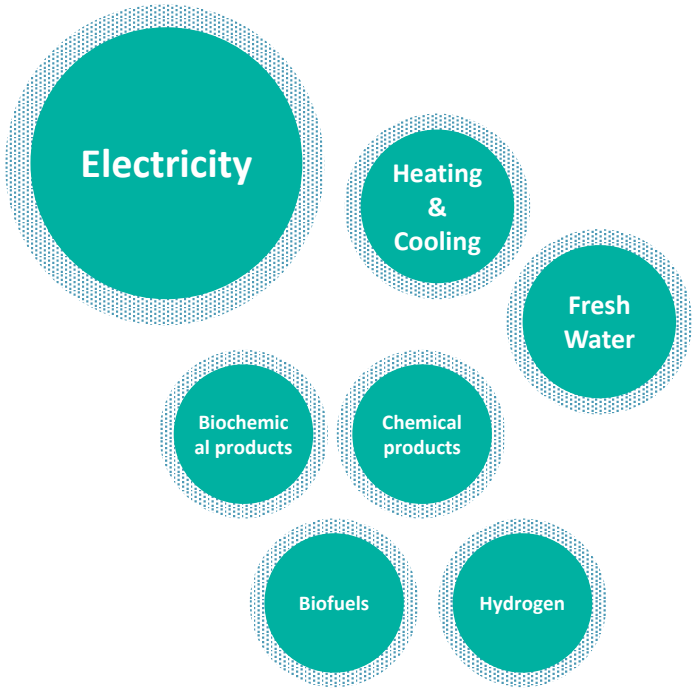
Ongoing need to develop a process for defining appropriate and rigorous metrics for measuring success in a number of critical target areas of ocean energy technology development.

To build clarity, information and understanding to support the definition of a fully defined set of metrics and success thresholds.

To establish a common international stage gate metrics framework to be used by technology developers, investors and funders.

Internationally accepted approach

Products and Markets for Ocean Energy



Utility-scale grid electricity generation

Islands electricity generation

Heating, Cooling and Desalination

Off-Grid Applications (remote locations)

China

Offshore floating wave power station (GIEC)

260kW Floating offshore multi-energy complementary platform based on Sharp Eagle WEC.

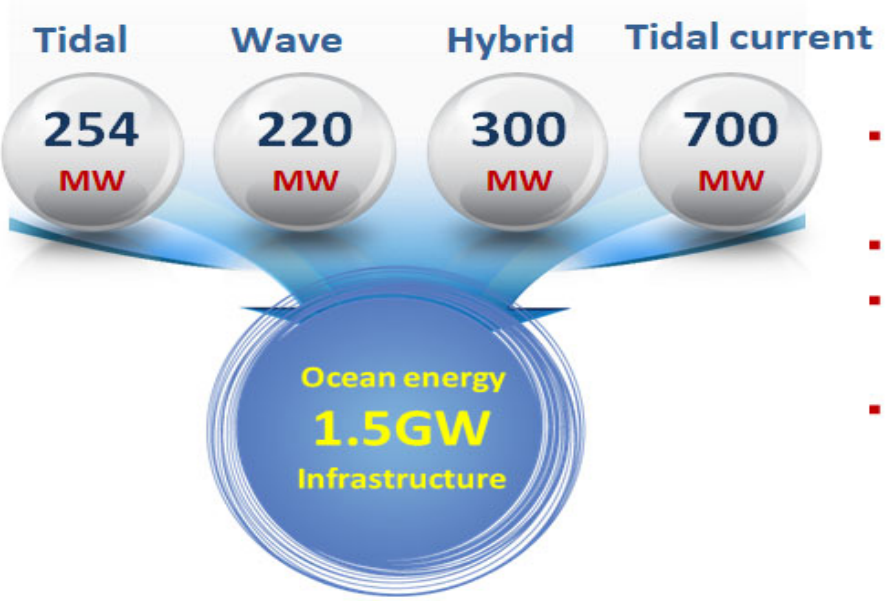
Installed wave energy 200kW, Installed solar energy 60kW, A desalination facility with daily production of 6 tones water.

China Feed in Tariff

- The temporary Feed-in Tariff for tidal Current Energy was approved by
- National Development and Reform Commission (NDRC) in June 2019.
- LHD tidal current energy project is the first project benefit from the
- temporary Feed-in Tariff policy.
- RMB 2.58/kWh (€ 0.33 /kWh) from 2019.

Korea Wave Energy

- **2030 strategy of Ministry of Oceans and Fisheries(MOF, 2017)**
  - **Development of 1.5GW ocean energy infrastructure by 2030**
  - **Supply clean energy and create energy industry(supply chain)**



<2030 strategy for development of ocean infrastructure>

- ***Strategy 1:*** Expansion of R&D in ocean energy and establishment of test bed
- ***Strategy 2:*** Construction of large scale ocean energy farm
- ***Strategy 3:*** Entering the global market and expanding domestic supply
- ***Strategy 4:*** Establishment of ocean energy certification system and strength of policy support

Australia- CRC

United states

IEA Technology Collaboration Programme
OCEAN ENERGY SYSTEMS

Henry Jeffrey
Chairman IEA OES

THANK YOU

OCEAN ENERGY SYSTEMS

iea Energy Technology Network

FOLLOW US

www.ocean-energy-systems.org

EXECUTIVE COMMITTEE

Henry Jeffrey
Chair
The University of Edinburgh, UK
henry.jeffrey@ed.ac.uk

Yann-Hervé De Roeck
Vice-Chair
France Energies Marines, FRANCE
Yann.Herve.De.Roeck@france-energies-marines.org

Ana Brito e Melo
Secretary
WavEC, PORTUGAL
ana@wavec.org