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Accelerating sustainable development in the Southern North Sea

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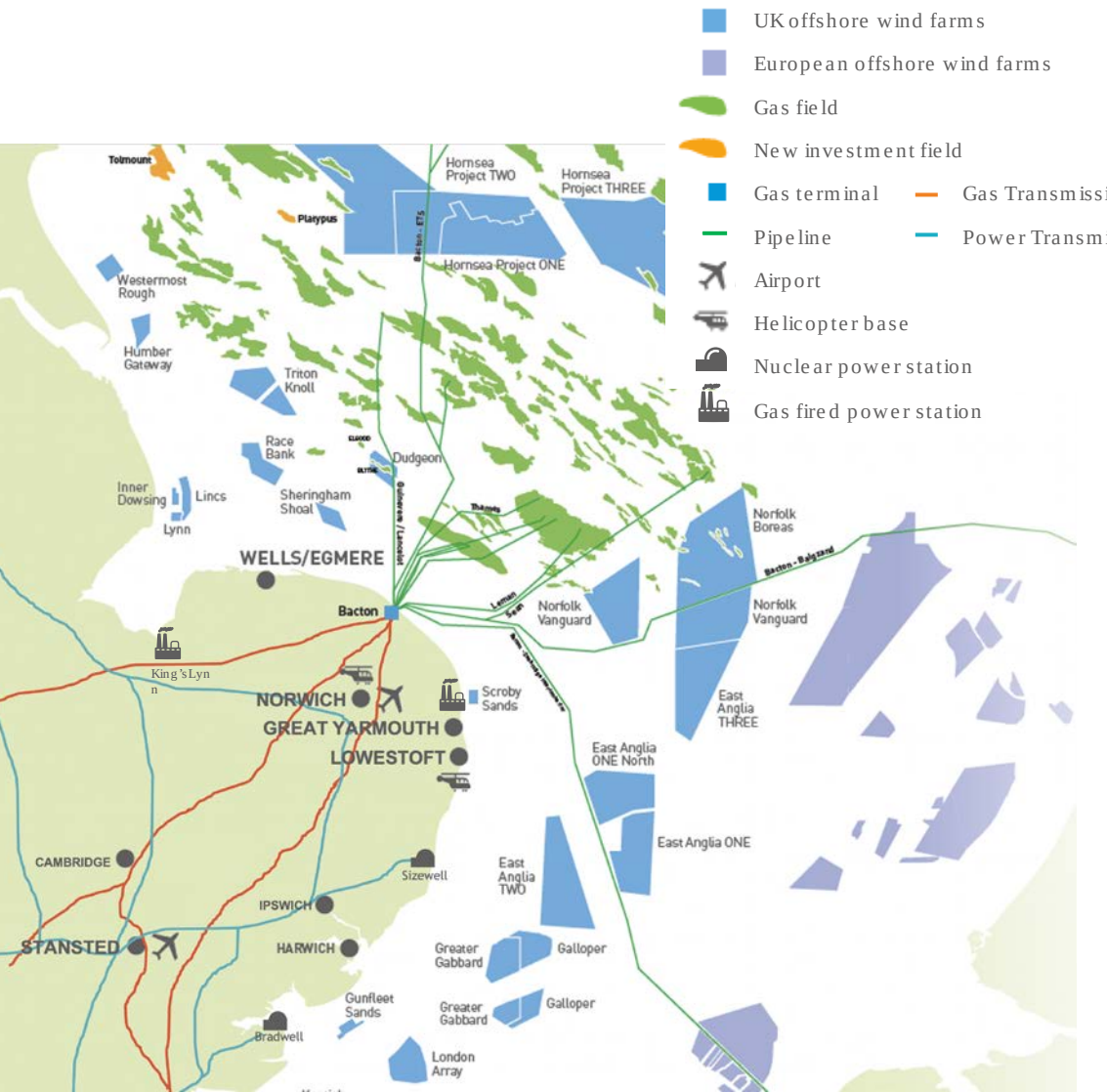
East Anglia: Full of opportunity



- At the **heart of the world's largest market for offshore wind**
- The Southern North Sea is **the UK's gas capital**
- A hub for **new nuclear** in Suffolk and North Essex
- A future hub for hydrogen production and servicing
- New opportunities in aquaculture and 'aqua-tech'
- Innovation test-bed for enabling technologies for monitoring

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There is a need and opportunity to…

- increase innovation-led regional growth
- collaborate to tackle complex cross-cutting challenges that affect multiple organisations and can't be solved in isolation
- explore challenges and opportunities of co-location & co-existence of marine activities
- identify opportunities to support biodiversity and marine habitat restoration through multi-use
- work with regulators to develop and pilot novel regulatory solutions that enable innovation in sustainable development

SuNRISE Coast

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UEA Interests in Energy and Marine

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Innovation in technology, design, operations & productivity

Engineering & Materials Science

AI, Computer Vision, Data Science and Digitalisation

Marine and Environmental Sciences

Business, Economics, Policy and Regulation

Social Sciences focused on a civic agenda

Marine & Environmental Sciences

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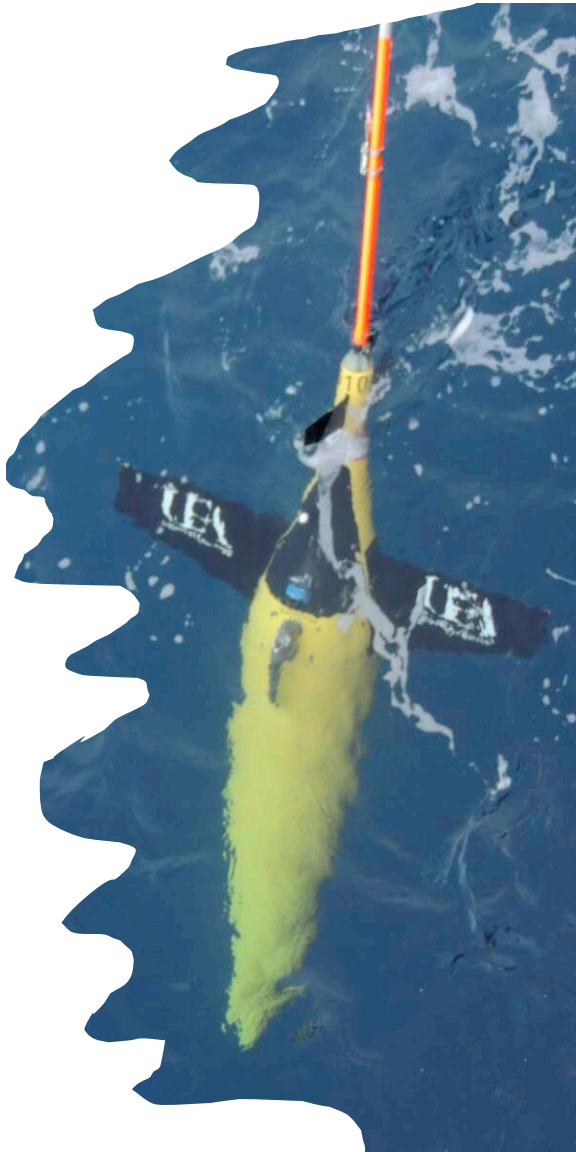
- The **Collaborative Centre for Sustainable Use of the Seas** was established as main vehicle for the UEA's partnership with Cefas in 2015, on the 50th anniversary of our collaboration
  - MARBEFES
- The **Centre for Social and Economic Research on the Global Environment** was founded in 1991 with explicit interdisciplinary remit of examining all aspects of decision making regarding environmental resources
  - ECOWIND
- Facilities: Autonomous Vehicles, Sediment Lab, Air-Sea-Ice Chamber
- The **Marine Knowledge Exchange Network** work with a wide range of stakeholders to identify opportunities
  - Blue Futures
  - Living Windfarms



Social sciences focused on a civic agenda

- **Science, Society & Sustainability** group are experts in environmental social science and human geography, with a focus on climate change and sustainable energy systems, they have established the **Observatory for Public Engagement with Energy and Climate Change**, as a core UK Energy Research Centre activity.
- The **Centre for Behavioural and Experimental Sciences** includes extensive expertise in behaviour change, science of consumer behaviour, diversity and discrimination, text analysis and artificial intelligence
- Diverse work on **coastal challenges and regeneration**, from coastal community transitions in the face of coastal erosion through to the role of arts in community regeneration.

Tech, design, operations & productivity

- UEA's £7.4 million, state-of-the-art **Productivity East** is regional **Additive Manufacturing** hub for engineering, technology and management, bringing together students, researchers & businesses.
- Specialist focus on **Energy Engineering** with a particular focus on **Sustainable Energy**.
- The **Fluid & Solid Mechanics** group use analytical and numerical tools to solve problems involving flowing fluids or solid body deformations
- Expertise in **Modelling and Simulation** in Engineering Systems
- Strengths in **Materials Science** across Schools of Engineering and Chemistry through their **Advanced Materials** and **Chemistry of Materials & Catalysis** research groups

AI, Computer Vision, Data Science & Digitalisation

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- The Smart Emerging Technologies Lab to develop proactive, intelligent, adaptive or autonomous systems that can learn, adapt and make decisions without human control.
- The Colour and Imaging Lab is at the leading edge of colour research in the world context and has a strong thread in computer vision and sensing technologies - including various projects in the marine environment.
- The Data Science and Statistics Laboratory is developing analysis approaches that use a combination of data science and statistical techniques to exploit "big data".

Business, Economics, Policy and Regulation

- In the Norwich Business School, the **Innovation Technology And Operations Management Group (ITOM)** group research supply chain management, optimisation, digitalisation etc
- Research within the **Strategy and Entrepreneurship** group includes cluster development and green/ clean tech strategies
- The **Centre for Competition Policy** is the UK's leading interdisciplinary centre focused on competition, regulation and consumer policy
- The **Responsible Business Regulation** group concern themselves with regulation, public policy, and business responsibility

- **Student talent** across all areas, with opportunities for industry to work closely with students during their degree programmes through projects, internships & placements

SuNRISE Coast

A vision for the Southern North Sea: to deliver a collaborative research and innovation programme for sustainable development, focused on the region's clean energy and marine sectors

Developed in conversation with a wide range of stakeholders, leading to support from over 70 organisations

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Cefas

CATAPULT Offshore Renewable Energy

EEEGR EAST OF ENGLAND ENERGY GROUP

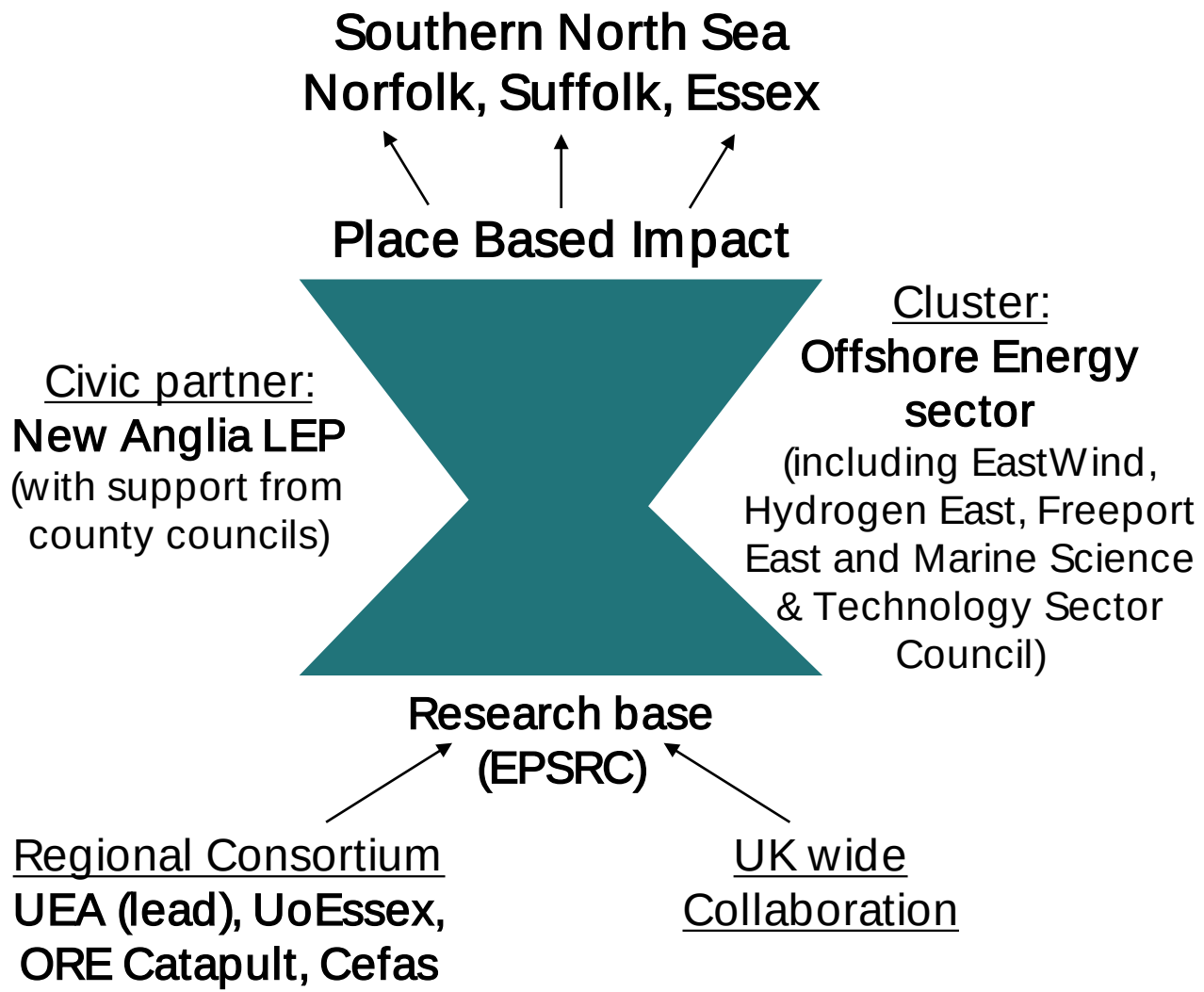
NEWANGLIA Local Enterprise Partnership for Norfolk and Suffolk

opergy

SuNRISE Coast: Research & Innovation Themes

- **Integration across the SNS and its coast**
  - Focussing on data acquisition, processing and analysis technologies and solutions
  - Supporting digitalisation of energy, infrastructure and marine sectors
  - Enabling collaboration between the region's energy, marine and growing digital clusters
- **Economic and environmentally sustainable multi-use of the SNS**
  - Whole systems approach to deliver options for greater co-existence and co-location of aqua-tech and energy together with other offshore activities
  - Use data from the Southern North Sea Data Observatory to test potential opportunities and determine their viability for the region and as blue investment targets.
- **Catalysing Future Sustainable Energy Technology & Infrastructure**
  - Integrated energy innovations in the Southern North Sea that will drive the energy transition and provide an international exemplar for the use of new technology and regulatory frameworks.
  - Both large-scale energy challenges and complementary local energy applications, such as electric vessels and autonomous inspection of offshore assets.
- **Rethinking Regulatory Frameworks**
  - Research key regulatory uncertainties, informed by stakeholder horizon scanning workshops
  - Develop 'Regulatory Sandbox' with broad stakeholder group to develop novel solutions, and collaborate with regulatory bodies to create workable 'trials' or 'zones' to test regulatory frameworks.
  - Develop pilots for novel regulatory models that support local growth, aligned to regional strengths and priorities.

SEA Co+Sustainable Energy Accelerator



Place-Based Impact Acceleration through the Sustainable Energy Accelerator on the Collaborative Coast

Key Aim: deliver benefit through collaboration

- local and regional economic growth, job creation
- cluster development through knowledge exchange, supply chain development, SME growth & spin outs
- development of research, development and innovation infrastructures
- skills development
- increased investment

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Underpinning research:

Engineering | Data Science | AI & digitization | Mathematical modelling | Chemistry

Challenge Areas:

Survey & Monitoring Tech
- Digitalization
- Remote monitoring
- Satellite Apps
- Sensor networking
- Robotics, AUVs & ROVs
- Communications

Energy Engineering
- Future Sustainable Energy Technologies
- Infrastructure
- Integrated energy systems
- Engineering co-existence opportunities
- Energy storage
- Shallow floating wind

Data Science & Integration
- State of the seabed
- Challenges to environment
- Biodiversity Net Gain
- Co-existence
- Integrated energy systems
- Energy storage

Materials for Energy
- Novel materials
- Materials recycling
- Materials testing & monitoring
- Circular Economy

AI, digitization & modelling
- Predictive modelling of future scenarios
- Modelling impacts of future activities
- Modelling potential outcomes of seabed restoration activities
- Digital twin of SNS

Framed within context of net zero, sustainable development, integration & multi-use of SNS to drive economic, environmental & social benefits

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UEA general stats: REF2021

World Top

50

for impact

Times Higher World University Rankings 2023, performance measured against United Nations' Sustainable Development Goals

World Top

100

for research citations

Times Higher World University Rankings 2023

13th

in the UK for quality of research outputs

Times Higher REF2021 Analysis

16th

in the UK for research impact

Times Higher REF2021 Analysis

1st

For Development Studies (2nd for Anthropology and Development Studies UOA overall)

Times Higher REF2021 Analysis

4th

overall for research quality in Earth Systems and Environmental Sciences

Times Higher REF2021 Analysis