# Enabling and scaling innovation in local energy systems and markets for accelerated decarbonisation

**IEA high-level expert consultation on digitalisation, energy efficiency and smart grids**

**Sarah KEAY-BRIGHT**

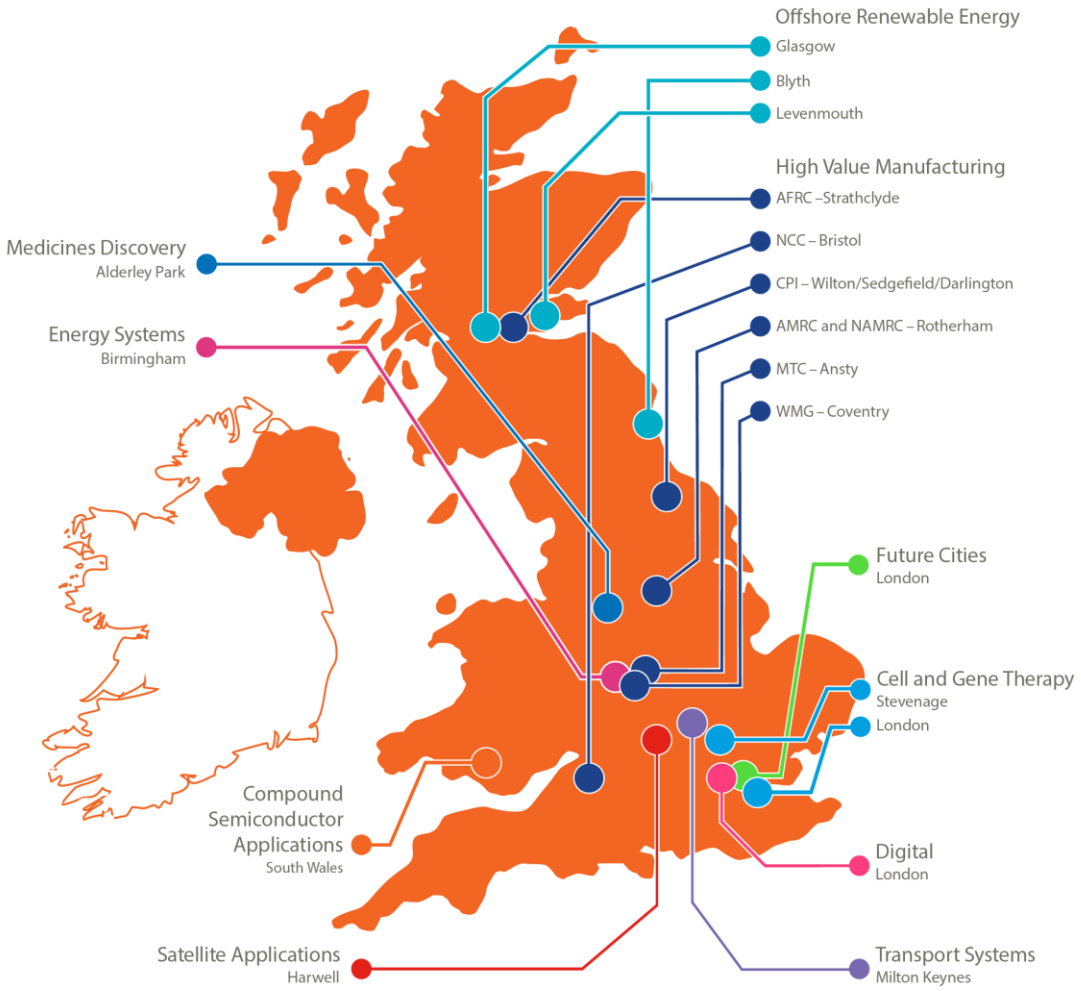
**Policy & Regulation Practice Manager**

11 March 2020, IEA, Paris.




@EnergySysCat

# What is a Catapult?

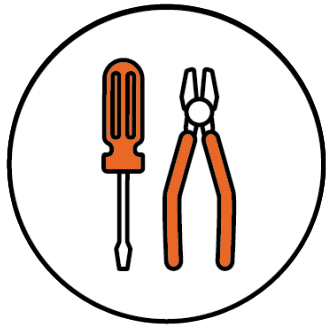






Established and overseen by Innovate UK

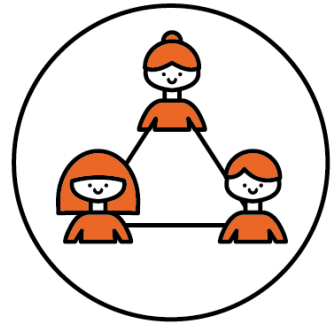


Technical capabilities, equipment, and other resources



Solve key problems and develop new products and services



Bridge the gap between stakeholders in the sector



Open up opportunities for innovators, in the UK and globally

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# What is Energy Systems Catapult?

**Mission: Unleash innovation and open new markets to capture the clean growth opportunity**

**170** Innovation experts

Hubs in Birmingham and Derby

We work with Innovate UK

Established and overseen by Innovate UK. Independent from Government. Not for profit

Bridge the gap between stakeholders in the sector

**A place to develop and test new ideas**

Supporting innovators

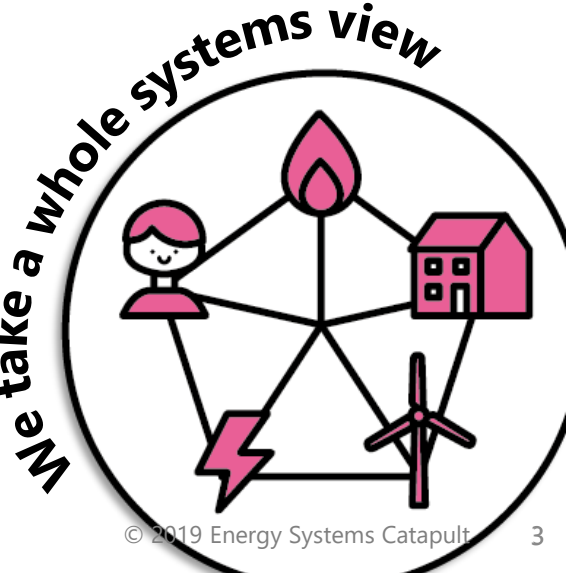
Research

Trials

Systems engineering

Digital

Modelling and simulation




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# OFGEM's RIIO1 (price control)

## *Design features to drive and enable innovation*

**Technical and commercial innovation encouraged through:**

**Core price control incentives** + **Specific Innovation schemes**

- **The totex approach** – to equalise incentives between capital expenditure and operational expenditure so companies not unduly incentivised towards 'capex' and consider novel 'non-build' solutions
- **The totex incentive mechanism** (TIM) – to encourage network company efficiency and innovation; sharing the resulting financial benefits between companies and consumers
- **Longer price control period** – to allow companies to retain the benefits from the TIM for longer

- **Network Innovation Allowance (NIA)** – part of each licensee's price control allowance to be spent on smaller-scale research, development and demonstration projects
- **A Network Innovation Competition (NIC)** – to fund larger scale flagship development and demonstration projects
- **An Innovation Roll-out Mechanism (IRM)** – to fund roll-out of proven innovations with carbon and/or environmental benefits in to business as usual

Source: NAO, 2020 (part 3) https://www.nao.org.uk/report/electricity-networks/

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# Ofgem's RIIO2 methodology decision for innovation, May 2019

## Encouraging more innovation as part of BAU activities

- Confirmed expectation that companies fund more innovation in RIIO-2 using their totex allowance.
- Confirmed use of totex incentive mechanism.
- Confirmed use of Business Plan Incentive.
- Confirmed challenge from RIIO-2 Challenge Group, Customer Engagement Groups and User Groups.

Business Plan Incentive minimum requirements re innovation set out in Business Plan Guidance

## Network Innovation Allowance

- Confirmed opportunity for additional NIA funding.
- Confirmed focus primarily on energy system transition or consumer vulnerability.
- Confirmed innovation allowances based on justification and need for individual allowances in Business Plan submissions, rather than providing automatic allowances linked to revenues.
- Detailed process for setting individual innovation allowances, including challenge to improve reporting.

Companies can include any need for additional innovation funding in Business Plans

## New strategic innovation funding pot

- Confirmed new innovation funding pot to refocus innovation funding on the energy system transition and what is strategically important.
- Funds will be recovered from use of system charges (further consideration of whether electricity innovation funds are also recovered from Balancing Services Use of System (BSUoS) Charges).

## Other relevant issues

- For whole system projects within business plans, confirmed broad definition of whole systems, as long as produces net benefits for their sector's consumers.
- Confirmed sector-wide innovation strategies to ensure they consider whole system solutions.
- Company reporting on implications of heat decarbonisation (within GD document).
- ESO specific issues, such as conflict with ESO incentives regime and ESO third party spend.
- Increasing third party involvement, including consideration of direct third party access and imposing wider requirements on companies.
- Independent evaluation of RIIO-1 innovation stimulus at end of RIIO-1.

Source: Ofgem https://www.ofgem.gov.uk/publications-and-updates/riio-2-sector-specific-methodology-decision

# PROSPERING FROM THE ENERGY REVOLUTION (PFER) - £102m government sponsored programme – smart local energy systems

## £77m for Future Energy Model Proving

- £48m for four practical demonstrators and £29m for some 10 future designs

## £8m Innovation Accelerator

- 15-20 new products

## £17m Programme Integration

- Energy Revolution Integration Service (ERIS - led by Energy Systems Catapult) and EnergyRev research consortium

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# PROSPERING FROM THE ENERGY REVOLUTION (PFER) - £102m government sponsored programme

£77m for Future Energy Model Prov

£17m Programme Integration

**ERIS** – Energy Revolution Integration Service - provides whole system integration services to the programme/projects, including facilitation of knowledge sharing/integration, support with developing business models, addressing wider system issues and risks etc.

**ERIS/EnergyRev collaborate** to systematically analyse **policy and regulatory issues and opportunities**. Direct follow up with Government Departments and Regulator where necessary or other avenues in order to resolve/exploit.

**EnergyRev** involves 60 researchers from 22 universities focussed on tackling the challenges around smart local energy systems from an interdisciplinary and whole-systems viewpoint.

- Energy Revolution Integration Service (ERIS – led by Energy Systems Catapult) and EnergyRev research consortium

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# ERIS | THE ENERGY REVOLUTION INTEGRATION SERVICE

Part of the Prospering from the Energy Revolution Challenge Programme

## ERIS INCREASES THE IMPACT OF A MAJOR NATIONAL PROGRAMME

**£102m FUNDING**
SUPPORTING DECARBONISATION TO ACHIEVE NET ZERO BY 2050

**11 CONCEPT DESIGNS**
CREATING INNOVATIVE SMART LOCAL ENERGY SYSTEM CONCEPTS

**10 DETAILED DESIGNS**
TURNING CONCEPT SYSTEMS INTO INVESTMENT-READY BUSINESSES

**4 DEMONSTRATORS**
PROVING BUSINESS MODEL VIABILITY WITH REAL CUSTOMERS



## ERIS EXISTS TO

**HARNESS THE 'PROSPERING FROM THE ENERGY REVOLUTION' PROGRAMME** TO ENHANCE THE BUSINESS CASE FOR SMART LOCAL ENERGY SYSTEMS AS A PATHWAY TO DECARBONISATION THROUGH HELPING KEY STAKEHOLDERS OVERCOME BARRIERS

**INVESTIGATING AND EVALUATING SMART LOCAL ENERGY SYSTEM VIABILITY** TO REDUCE RISKS TO DEVELOPMENT AND INVESTMENT

**GENERATING INSIGHTS THAT INCREASE THE IMPACT OF THE PROGRAMME** BY INFORMING LOCAL AND NATIONAL DECISION AND POLICY MAKING

**IDENTIFYING AND OVERCOMING BARRIERS TO SMART LOCAL ENERGY SYSTEM DEPLOYMENT** BY ENABLING COLLABORATION AND DELIVERING WHOLE ENERGY SYSTEM EXPERTISE

**ERIS IS BUILDING A COMMUNITY TO COMBINE FORCES AROUND OPPORTUNITIES, CHALLENGES AND SYNERGIES**

**THROUGHOUT THE PROGRAMME ERIS WILL SYNTHESISE LESSONS AND INSIGHTS THAT SUPPORT DECARBONISATION OF THE ENERGY SECTOR**

- ENERGY SYSTEM DEVELOPERS
- INVESTORS
- LOCAL AUTHORITIES
- GOVERNMENT
- REGULATORS
- ACADEMICS

INDUSTRIAL STRATEGY | UK Research and Innovation

CATAPULT Energy Systems

# PROSPERING FROM THE ENERGY REVOLUTION (PFER) - £102m government sponsored programme

£77m for Future Energy Model Proving

**PROJECT EVALUATION** *by Ipsos MORI, ERIS and EnergyRev looking at different aspects.*
Among other things, must evaluate **replicability, scalability and investability (ERIS).**

**Scalability aspects to be assessed**: • the opportunity to recruit additional customers in same location; • the ability to expand the area covered; • the challenges and opportunities posed when one SLES is adjacent to another; • the costs involved in scaling.

**E.g. ReFlex demonstrator** has already defined factors and criteria for prospective sites for roll-out, in UK and abroad. Also assessing creation/replication different SPV models.

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Some of these 'future' projects may assume or require **a policy/regulatory landscape that is different to today's.** These projects can use Ofgem's **'regulatory sandbox'** mechanism.

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# Ofgem's 'regulatory sandboxes' for innovators

***The sandbox, launched 2017, enables innovators to trial new products, services and business models without some of the usual rules applying.***

| What Ofgem learned | New Sandbox service – from March 2020 |
|---|---|
| Innovators want to access the sandbox at time of need | An on-demand service is more innovator friendly. Innovator's stage of development determines timing of request. Not forced to ask for support too soon. |
| Scope of rules covered too narrow | Ofgem is looking at expanding the number of rules in the supply licence that it can provide relief from. Sandbox now includes code tools: Balancing and Settlement Codes (BSC); Distribution Connection and Use of System Agreement (DCUSA); Retail Energy Code (REC). The Code Administrators - new innovation principle - collective Code of Practice (CACoP). |
| Innovators want to launch businesses not do trials | Sandbox will confirm whether non-traditional types of activity are permissible. Derogations available to support market entry |
| Start-ups want to signal low regulatory risks to investors | Sandbox will confirm whether non-traditional types of activity are permissible. |
| Innovators want clarity about support available | Guidance will be explicit about sandbox scope. Clear entry criteria for different sandbox services. |
| Innovators often need guidance, not sandboxes | Ofgem will publish general guidance on common use cases / issues arising from the feedback service. Where possible, Ofgem will publish details of activities confirmed as permissible so this is available to others. Since 2017 (window 2), 37 expressions of interest but only 4 sandboxes granted as most needed support to better understand energy sector. |

More info on launch of new sandbox and lessons learned

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