

Introduction to Energy Systems Catapult

Powering Productivity on African Grids Workshop

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About Energy Systems Catapult

Non-profit established by Innovate UK in 2015 to support development, demonstration and deployment of clean, affordable, equitable and scalable energy solutions

Work with governments, industry, academia, consumers and investors, providing independent, whole-system insight and delivery capability across energy value chain

Delivered over 500 projects and helped innovators raise over £600M since 2015

Average revenue £30M, multidisciplinary team of 260 staff

International focus areas



Modernisation
of energy grids



Integrating
growing
energy
demand



Data, digital
and artificial
intelligence
applications

Core Principles

- Independent
- Whole system thinking
- Innovate to solve real world challenges
- Demand-driven, consumer-led
- Equitable and inclusive
- Local implementing partners

Priority Countries

- Kenya
- India
- Brazil
- South Africa
- Australia
- Singapore
- Many more...

Modernisation of energy grids and digitalisation

We help utilities to modernise and plan, operate and invest in their grids, so electricity becomes more reliable and affordable for consumers

Energy grid services

- **Demand integration and planning:** helping utilities to integrate new electric demand and offer clean, reliable energy for households and businesses
- **Regulation and markets:** designing tariffs, incentives and market frameworks for regulators and utilities
- **Pilots and innovator support:** working with innovators to generate evidence from real-world trials and accelerators; supporting them to scale-up and develop partnerships
- **Whole-system grid planning and strategy:** modelling roadmaps for network planning, electrification demand growth, and introduction of new technologies

Data, digital and AI services

- **Data platforms:** creating interoperable systems so utilities, regulators and investors see the full grid picture.
- **AI for utility performance:** practical machine learning for loss detection, equipment failure, demand forecasting and reform economics.
- **Responsible data sharing:** establishing standards and safeguards so digitalisation benefits all consumers.
- **Accelerating development of deep tech innovation**

Project examples

Grid modernisation and digitalisation in the UK



Energy sector digitalisation plan



Energy Data Taskforce



GridFlex Programme



Living Lab

International work



RSA - Energy system modelling - solar PV uptake and tariffs



Brazil - Innovating for electricity systems
Zero carbon mining



India - Innovating for transport and energy systems



Singapore - Energy digitalisation
First VPP project



Grid performance and demand management



Taiwan - Roadmap for energy system



EU - Demand side Flexibility market assessment

The problem

- Electrification has expanded across SSA, yet **consumption remains low**, utilities are financially fragile, and **system losses exceed 20–30%**
- Inefficient power systems drive higher emissions and continued reliance on polluting fuels, with major health impacts.
- Governments **spend around 1.5% of GDP on utility bailouts**, diverting funds from health, education, and climate action

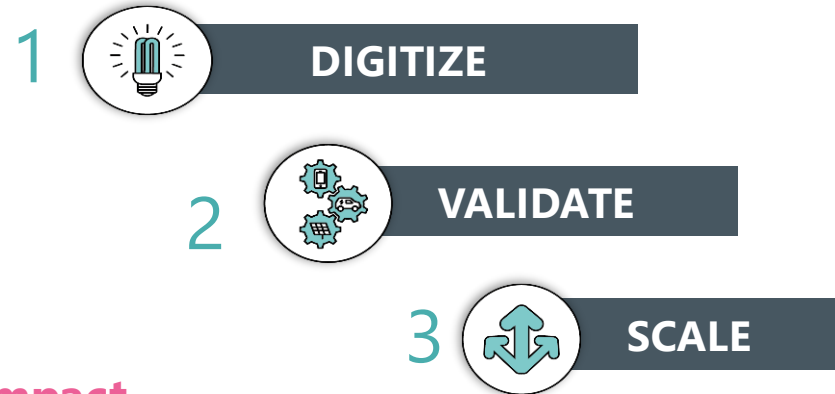
The constraint is **not generation but utility grid performance and demand activation.**

Without addressing this, electrification and climate finance will fail to deliver emissions reductions or health benefits at scale.

Our solution

Working with a local digital consulting firm in Kenya on a 2-year grid modernisation and digitalisation program to support utilities in East Africa to modernise how they plan, operate, and invest in electricity grids.

Countries: Kenya, Uganda, Tanzania



Impact

- **Utilities become more bankable** and offer better service to their customers
- **Power becomes reliable and affordable** enough for households to cook with it, children to study by it, and clinics to depend on it.
- **Replicable model** adopted across African countries

Thank you

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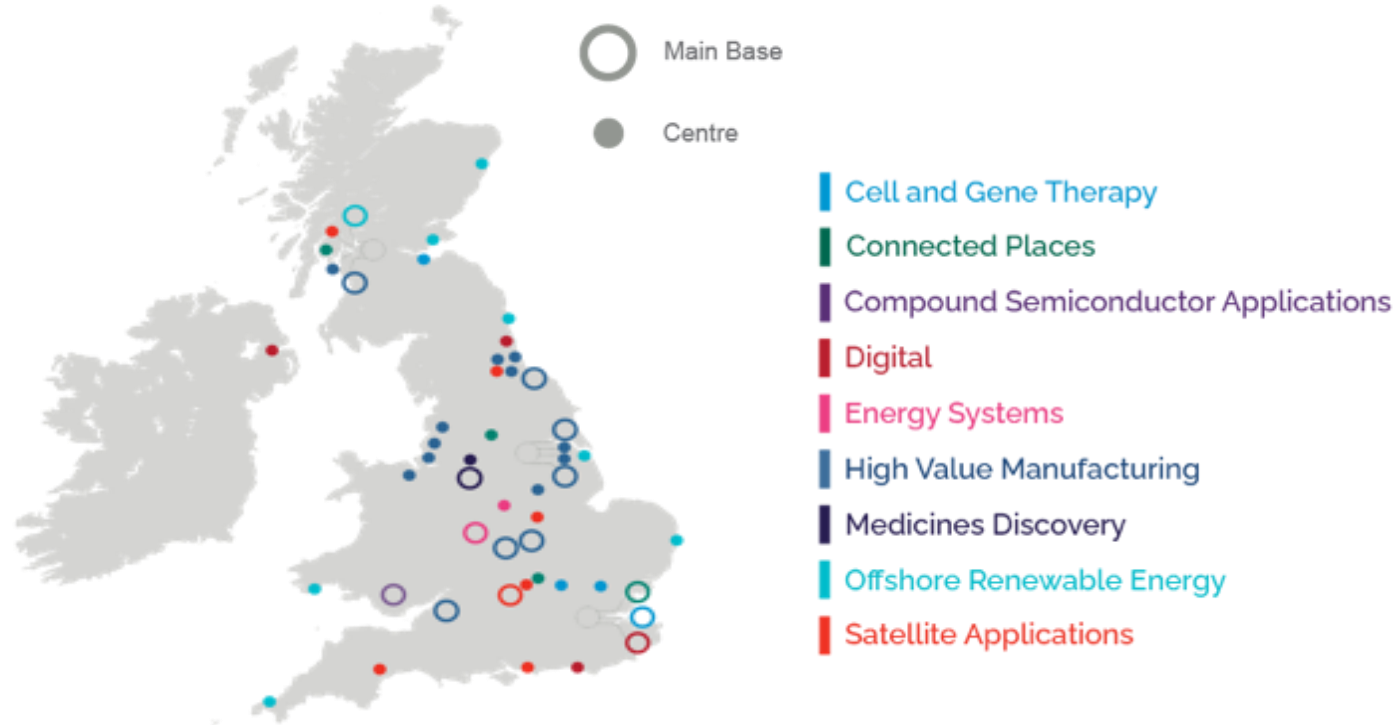
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UK and international ecosystem

ESC is part of the Catapult Network, a network of nine world-leading technology and innovation centres established by Innovate UK.



UK and overseas governments



Innovate UK



Department for
Business & Trade



Department for
Energy Security
& Net Zero



Foreign, Commonwealth
& Development Office

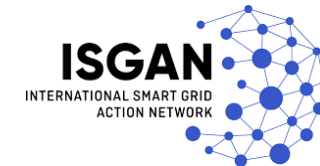


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International and funding organisations



**ENERGY
CATALYST**



**Pooled fund on
International
Energy**