



CENTRE FOR RESEARCH INTO
ENERGY DEMAND SOLUTIONS

Energy demand side flexibility: the Centre for Research into Energy Demand Solutions (CREDS)

READING 2 JULY 2019

'BUILDING OUR FUTURE
ENVIRONMENT'

Professor Jacopo Torriti

University of Reading



www.creds.ac.uk

Energy Demand Research Context

- Energy system context:
 - Commitment to low carbon, secure and affordable energy system over a few decades;
 - Energy demand will be critical to delivery, but under-recognised in much public discourse.
- UK Research landscape context:
 - Six End Use Energy Demand (EUED) Centres (2013-2018) and other investments provide a strong existing base of research capacity;
 - UKRI priority is to develop capacity, bring together these strands and increase impact.



The Centre for Research into Energy Demand Solutions (CREDS)

- A UKRI Energy Programme funded, from April 2018 to March 2023, with a budget of £19.5 million
- A distributed centre, involving 13 universities, with a core team based at the University of Oxford
- More information at: creds.ac.uk



Consortium institutions



CREDS Themes



Transport



Buildings



Materials

Flexibility

Digital

Policy



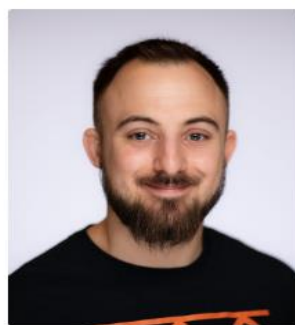
CENTRE FOR RESEARCH INTO
ENERGY DEMAND SOLUTIONS

Flexibility Theme





Jacopo Torriti



Stanley Blue



**Peter J
Forman**



**Martin Steve
Green**



**Greg
Marsden**



**Elizabeth
Shove**



**Param J.
Singh**



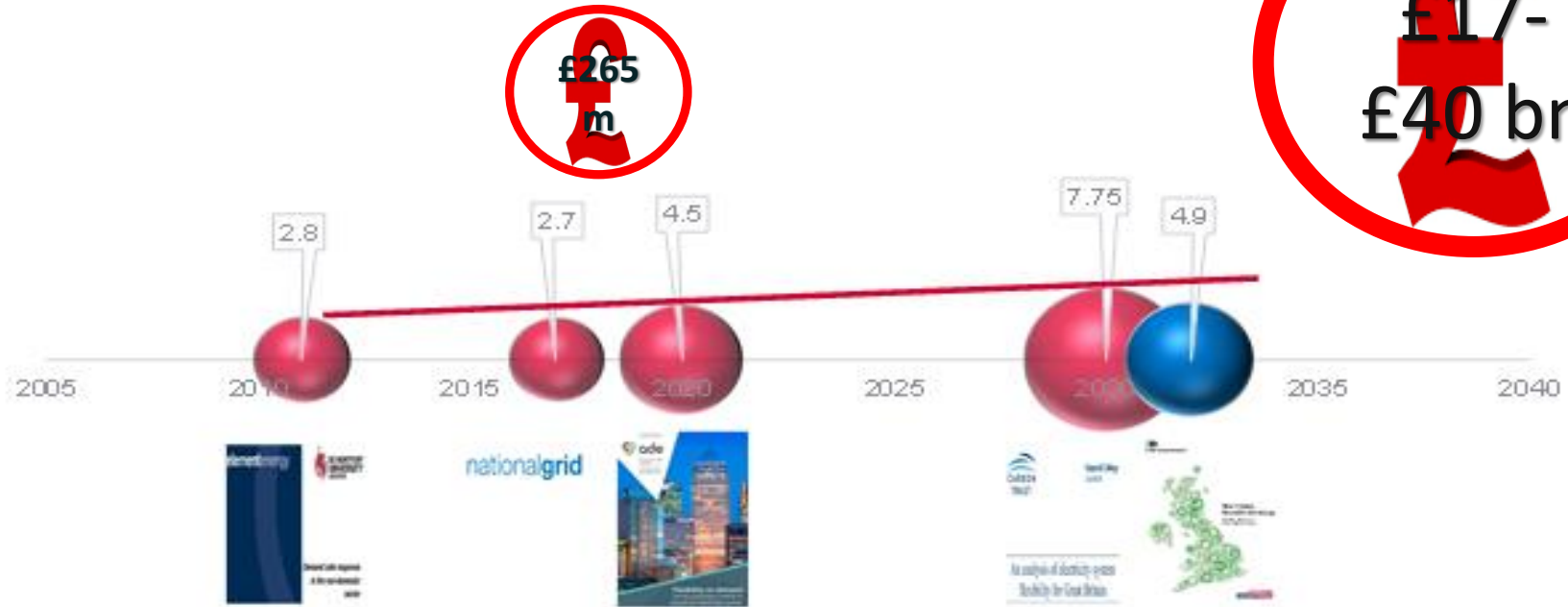
**Stefan Thor
Smith**

Importance of flexibility (1)

- Improving balancing with renewables
- Reducing costs of electricity generation
- Making the most of smart systems and battery storage



Importance of flexibility (2)



Reducing usage at the site



Offsetting network supply with onsite generation



+



CREDS: projects on demand-side flexibility

Understanding how flexibility is bound up with the rhythm of society and what people do

Detailed understanding of the contemporary timing of energy demand - domestic, non-domestic and in relation to the mobility of things and people.

Assessing interventions aimed at reducing peaks and increasing flexibility in the timing of energy demand

Analysis of technologies, pricing mechanisms and shifts in institutional timings to better understand how, where, and when people demand energy and whether they are likely to enable a more flexible management of demand.

CREDS: projects on demand-side flexibility

| Sub theme | Project |
|---|---|
| 4.1 Defining, conceptualising and measuring flexibility | Flexibility: past, present and future |
| | Measuring flexibility of demand |
| 4.2 Intervening to enhance flexibility | Conceptualising flexibility |
| | Flexible demand-side technologies and temporality |
| | Price and time elasticity |
| | Time dependence and institutional flexibility |



CENTRE FOR RESEARCH INTO
ENERGY DEMAND SOLUTIONS

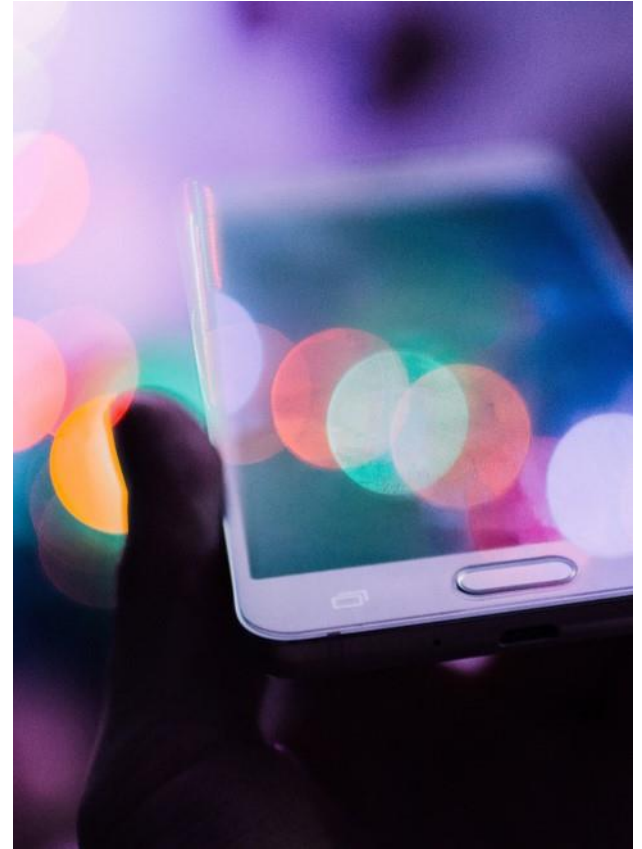
Opportunities for engagement with CREDS



www.creds.ac.uk

CREDS Challenges

- Challenge 1 – already started
'Decarbonisation of Heat
- Challenges 2 and 3 will be drawn from three research topics:
 - Equity and justice in the energy transition
 - Decarbonisation of difficult sectors
 - Co-benefits of changing energy demand
- Full bids have been submitted. Panel date:
15th July 2019.



Opportunities for academic engagement

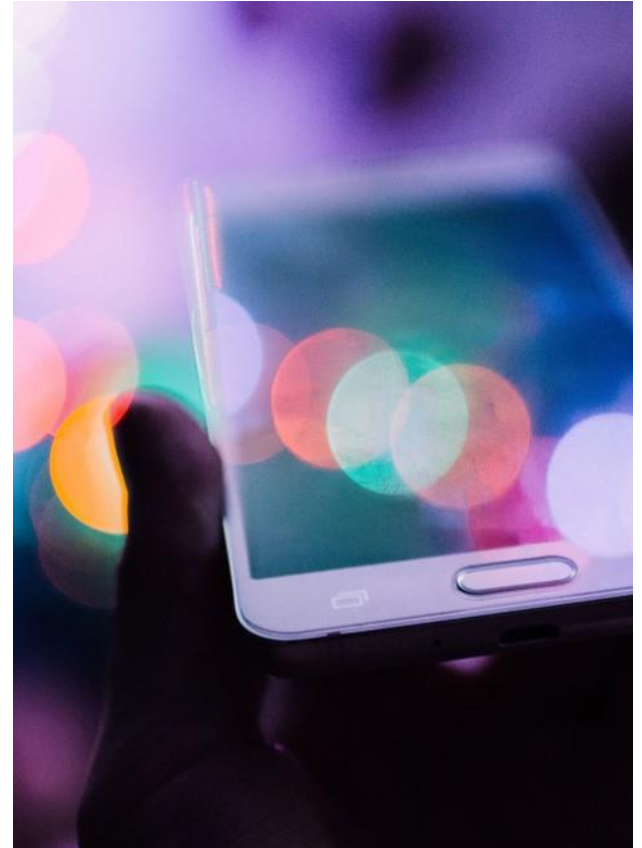
Now:

2nd EUED Technology Call

- Focussed on innovative energy demand technology
- Separate projects linked to CREDS overall goals
- Closing date 1 October

Future:

- **Flexible Fund** for early career researchers



CREDS Flexible Fund

- A £ 1 million call to support 'early career researcher led projects'; open to all innovative ideas in the area of energy demand; call July, closing date December 2019.
- Probable future uses:
 - "integration projects"
 - "Impact acceleration awards"
 - "gap fund"
 - "closing project"



Visitors International Programme

- CREDS invites international researchers, policy makers and business or industry people working in the field of energy demand to visit CREDS as visiting fellows or on secondment.
 - Ensure we benefit from international research to gain lessons for the UK.
 - Develop collaborative research to produce outputs targeted at international audiences.
 - Engage in joint dissemination that will impact on international debates.
 - Build networks and ongoing relationships that will support energy demand research communities in the UK and internationally.

<https://www.creds.ac.uk/visitors-international-programme-vip/>



Opportunities for engagement with industry

- We will work with key partners drawn from:
 - innovative businesses, large and small
 - policymakers and influencers
- With our key partners we will:
 - Co-create research questions and studies
 - Undertake innovative research

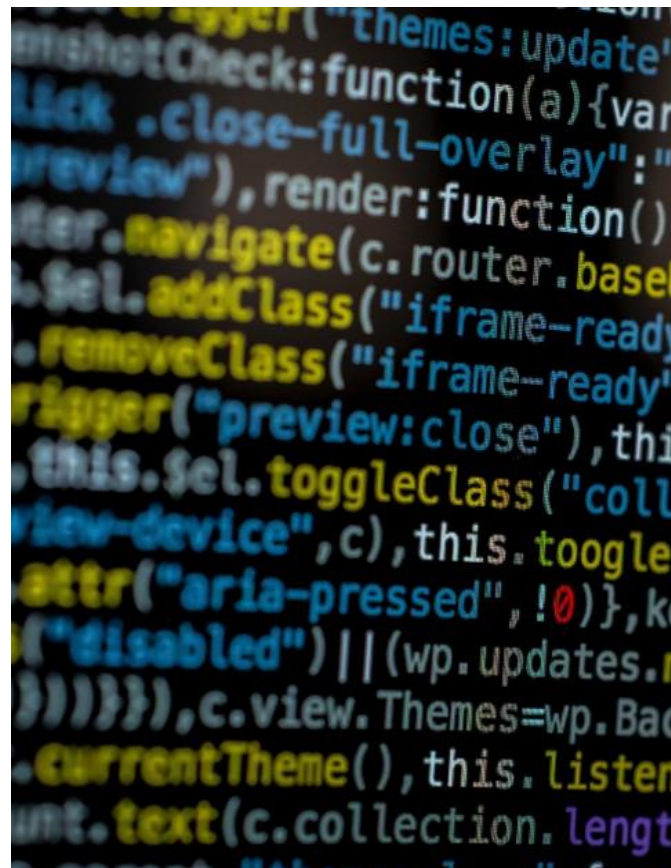


Kay Jenkinson

Sarah Higginson

kay.jenkinson@ouce.ox.ac.uk

sarah.higginson@ouce.ox.ac.uk





<https://www.youtube.com/watch?v=S8rvyT8yZNU&feature=youtu.be>



www.creds.ac.uk



<https://www.routledge.com/Energy-Fables-Challenging-Ideas-in-the-Energy-Sector-1st-Edition/Rinkinen-Shove-Torriti/p/book/9780367027797>



<https://research.reading.ac.uk/redpeak/>



CENTRE FOR RESEARCH INTO
ENERGY DEMAND SOLUTIONS

Thanks



@JTorriti



www.creds.ac.uk