



Hy4Heat

Low Carbon Networks and Innovation Conference

17 October 2018

Mark Neller, Programme Director, Arup +

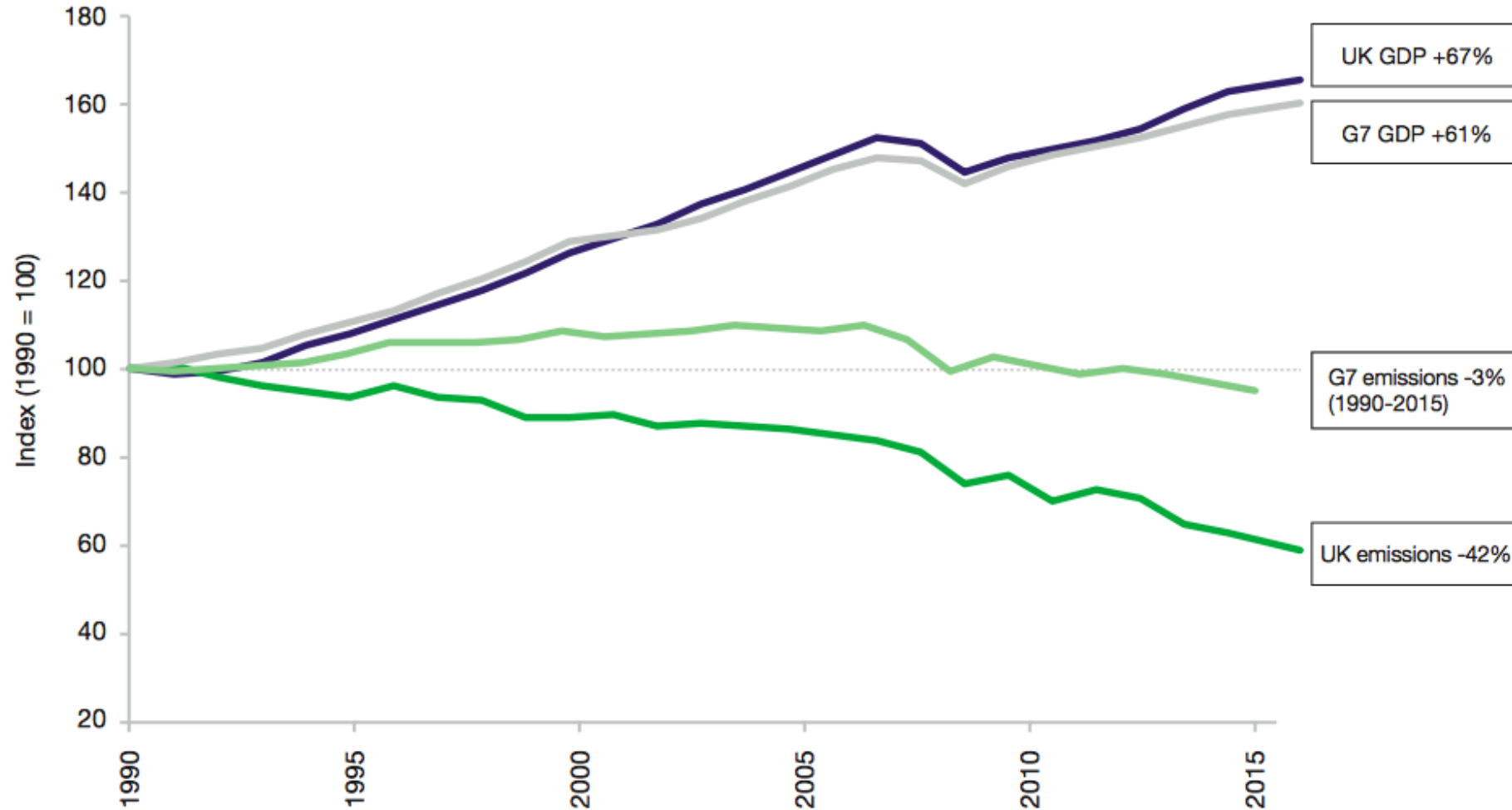




The Clean Growth Strategy

Leading the way to a low carbon future

UK and G7 economic growth and emissions reductions



The BEIS Energy Innovation Programme

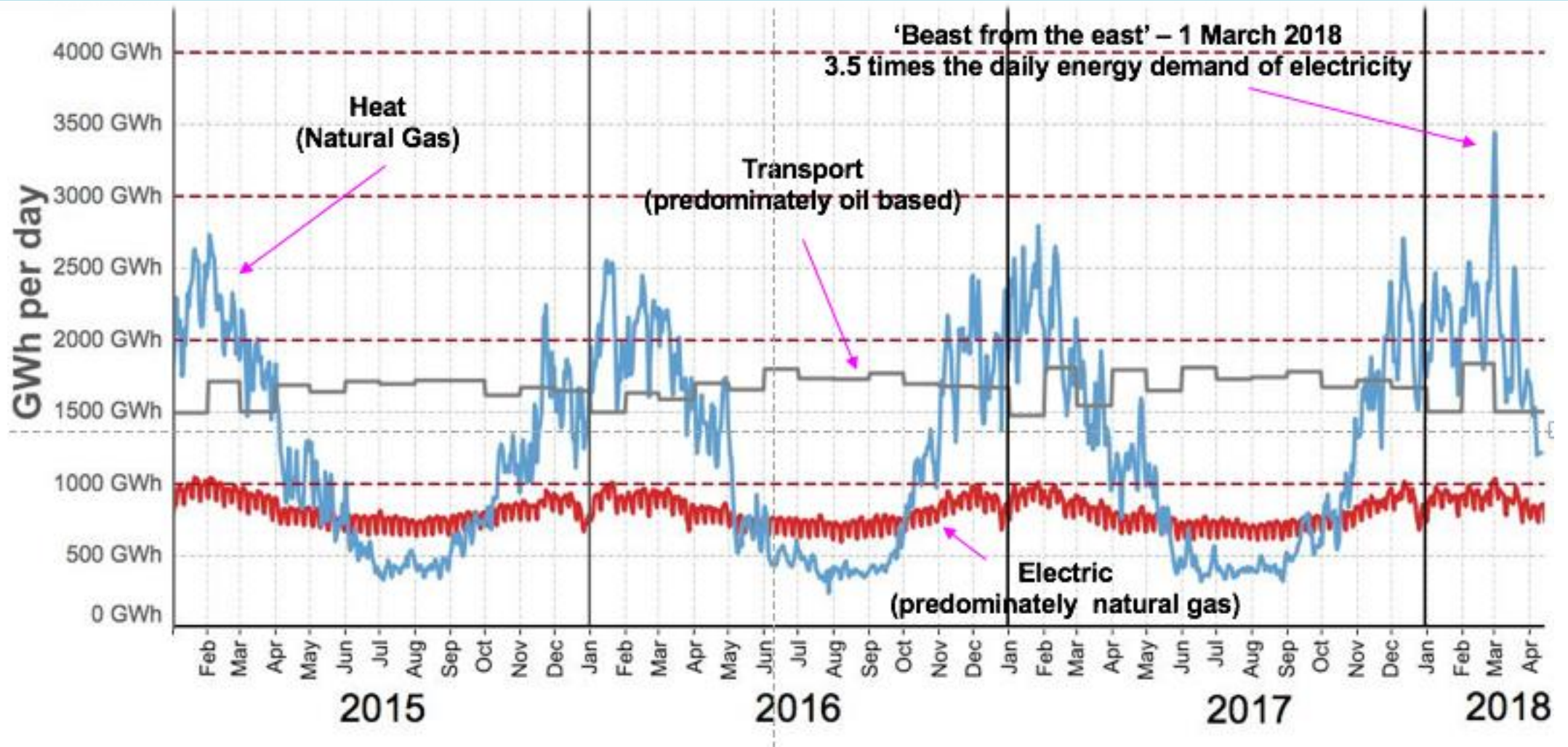
- Up to £505m to accelerate the commercialisation of innovative, clean energy technologies and processes
 - £70m smart systems
 - £90m built environment (energy efficiency and heating)
 - £100m industrial decarbonisation and carbon capture, usage and storage (CCUS)
 - c.£180m nuclear innovation
 - c.£15m renewables innovation
 - c.£50m support for energy entrepreneurs and green financing

Decarbonising heat

- Electrification of heating
 - Heat pumps
 - Hybrid heat pumps and gas boilers
- Decarbonisation of the gas grid
 - Bio-gas
 - Hydrogen
- Heat networks

Not clear which approach(es) will work best at scale and offer the most cost effective long term answers

UK energy use



Hy4Heat mission

To establish if it is technically possible, safe and convenient to replace natural gas (methane) with hydrogen in residential and commercial buildings and gas appliances

This will help enable the government to determine whether to proceed to a community trial of hydrogen



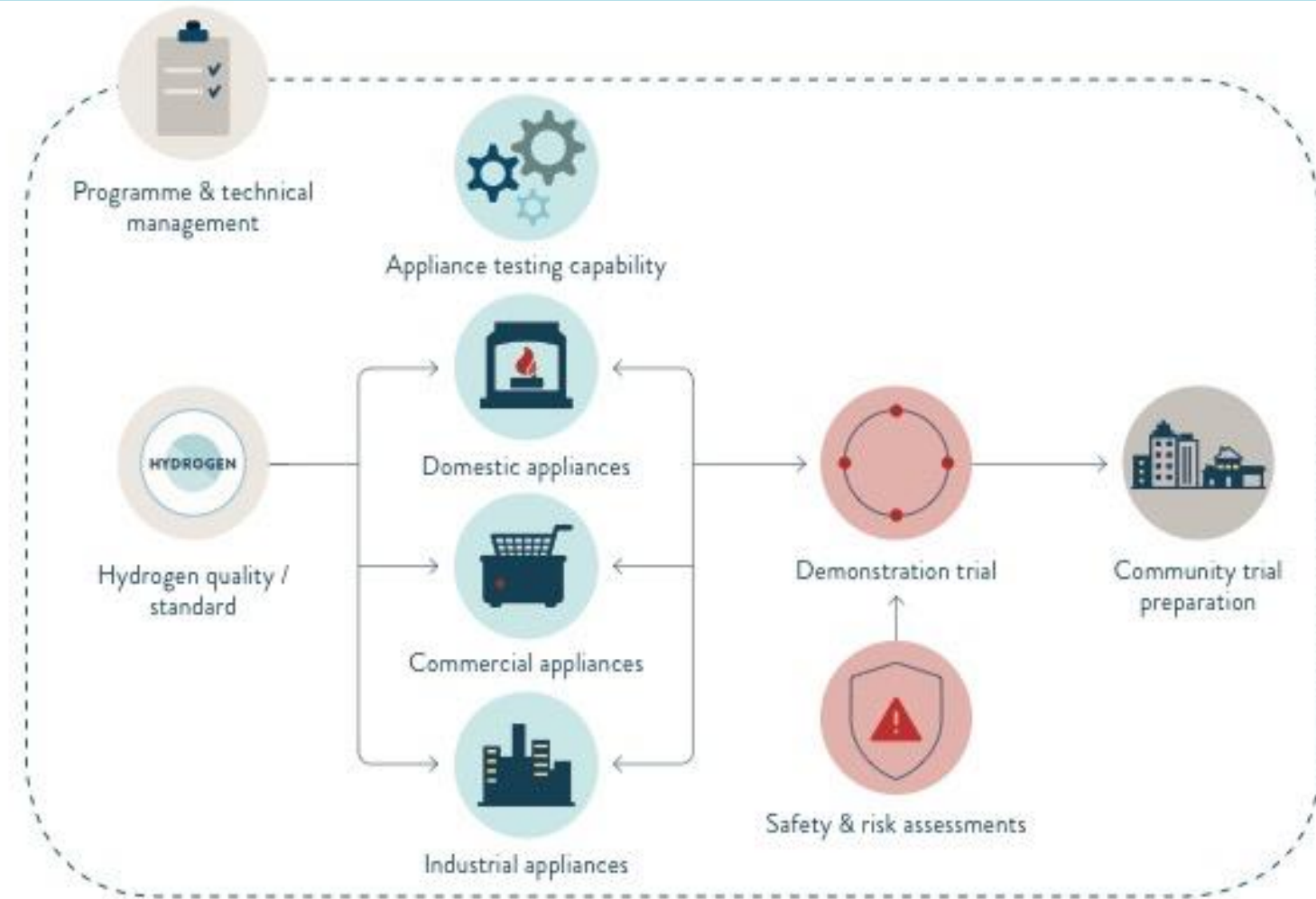
Two main challenges:

- Safety issues
- Modifying domestic appliances



[Photo: Roger Wollstadt](#)

Hy4Heat programme work packages



Hydrogen quality standards (WP2)

- Odorant - H100 - NPL
- Purity and colourant - DNVGL
- IGEM revising relevant existing standards with support from DNVGL and HSL



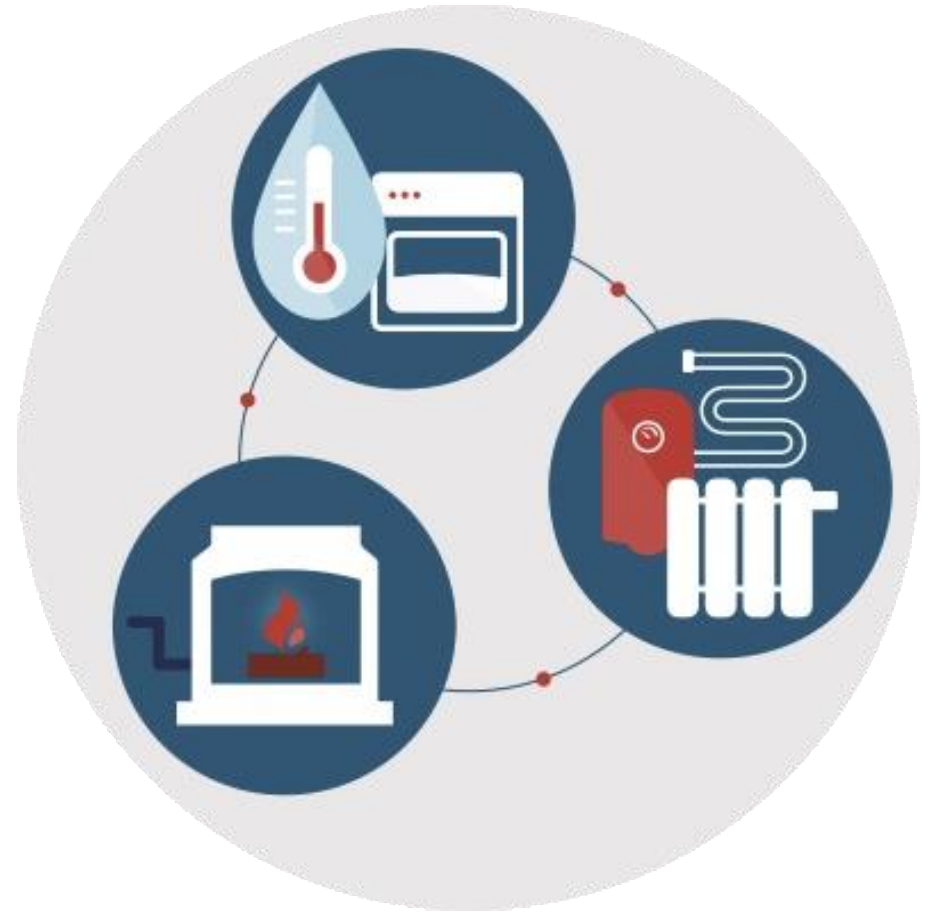
Hydrogen appliance certification (WP3)

- Hydrogen appliances to be certified under Gas Appliance Regulations
- Establishing an appliance testing and certification committee
- BSI carrying out this work



Domestic hydrogen appliances (WP4)

- Small Business Research Initiative pre-commercial procurement competition
 - gas fire
 - gas boilers
 - gas cookers
 - innovative hydrogen appliance



Phased competition structure

Nov 2018

Feb 2019

Mar 2020

Mar 2021

PHASE I
Solution design

3 months

PHASE 2a
Prototype development v1.0

14 months

PHASE 2b
Prototype development v2.0

12 months

WP8
Demonstration Trials

Appliance certified
for demo trials

Fully certified

Commercial / Industrial appliances (WP5/6)

- Market study into commercial and industrial appliance sectors
- ITT published 30 July 2018
- Tenders received 24 August 2018
- ERM awarded WP5 and Element Energy WP6



Safety testing (WP7)

- Co-ordination group established with GDNOs
- Buy-in from GDNOs, HSE and Ofgem to approach during next quarter.
- Establishment of experimental framework contracts.



Demonstration trial (WP8)

- Unoccupied demonstration trial
- Using prototypes developed in work package 4
- Fixed location and mobile facility



Potential community trial (WP9)

- Planning and preparation necessary for a potential community trial
- Work to agree required outcomes from trials to be agreed with BEIS stakeholders
- Funding options
- Decision point for funding



Hy4Heat programme overview

2018

2019

2020

2021

Hy4Heat ends



WP1&9 PMC Managing WPs in preparation for a Community Trial



WP2 Quality and standards



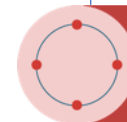
WP7 Safety and risk assessment



WP3 Development of appliance certification



WP4 Development of certified domestic appliances



WP8 Demonstration trials



WP5 Commercial appliances
Understanding the market

Potential commercial appliance development



WP6 Industrial appliances
Understanding the market

Potential industrial appliance development

Possible
Community Trial



Collaboration and co-ordination



Cadent
Your Gas Network
HyNet Project



Updates



Hy4Heat's Mission:

To establish if it is technically possible, safe, and convenient to replace natural gas (methane) with hydrogen in residential and commercial buildings and gas appliances. This will enable the government to determine whether to proceed to a community trial

Latest updates

October 2018, Applications to develop domestic hydrogen appliances being assessed

Manufacturers looking to be part of the small business research initiative, SBRI, to develop domestic hydrogen appliances (work package 4) have submitted their applications. These are being assessed and successful applicants will be informed in the coming weeks.

October 2018, IGEM awarded contract by BEIS

The Institution of Gas Engineers & Managers (IGEM) has been appointed to develop hydrogen standards for the Hy4Heat programme. IGEM will be reviewing all relevant existing standards and bringing together a

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Social media updates



Hy4Heat

The Institution of Gas Engineers & Managers (IGEM) has been appointed to develop hydrogen standards for the Hy4Heat...

<https://t.co/y0mNBj6QVJ>

A week ago



Hy4Heat

This Friday (5 Oct) is the deadline to respond to the ITT to develop domestic hydrogen appliances. We've published...

<https://t.co/A3OdE7Y9fS>

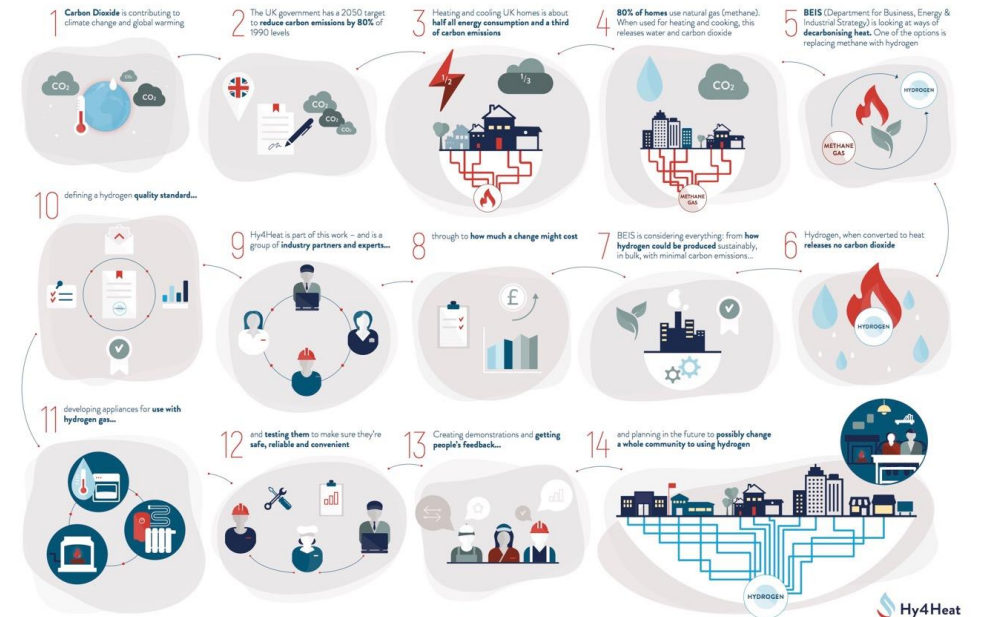
A week ago



Hy4Heat

Arup Director @MarkNeller05 will be giving the #SHFCA2018

The Hy4Heat Programme



www.hy4heat.info

Q&A



The Hy4Heat Programme



