

The Case for Converting Existing Biogas CHP to Biomethane

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A specialist business consultancy with over 19 years of bioeconomy experience



Mission

to provide sector leading **strategic business consultancy**; analysing, explaining and **de-risking** the bioeconomy for our clients.

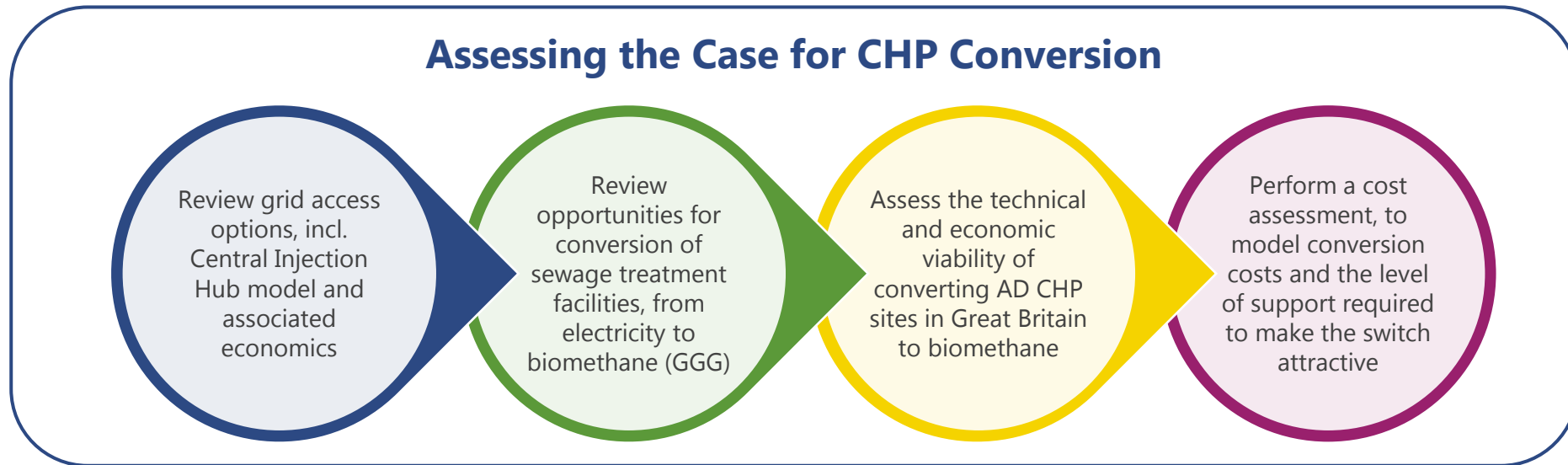
Objective

to provide clients with a **strategic view** of feedstock, technology, policy and market development across the bioeconomy; enabling them to make **informed business decisions** and develop **sustainable business strategies**.

EIC Biomethane Study



- NNFCC worked alongside CNG Services to deliver a Biomethane Study, considering the scale of opportunity for CHP conversion, and the practical, technical, operational and economic impacts of doing so.
- The Project was funded under the Network Innovation Allowance (NIA), coordinated by the Energy Innovation Centre (EIC) and ran alongside the Energy Networks Association (ENA) Gas Goes Green initiative.
- Project Sponsors were WWU and NGN

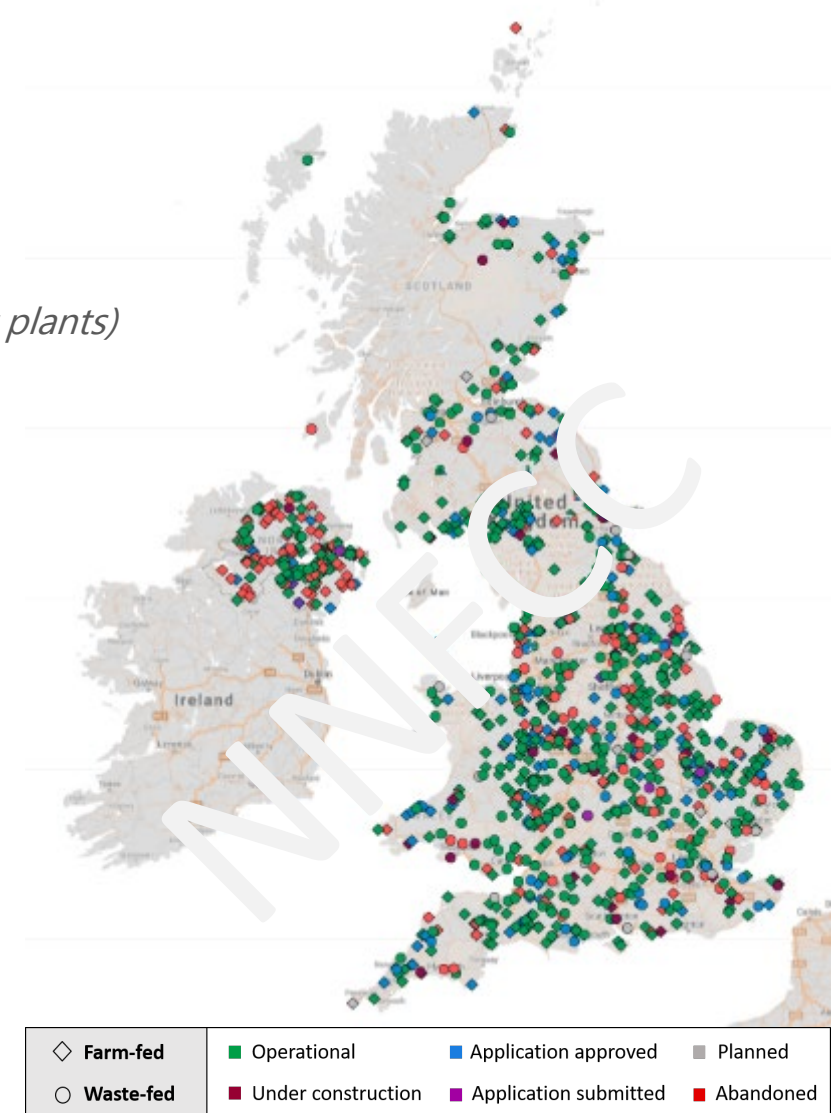


GB Market analysis



In Great Britain there are 562 AD facilities (*excl. water treatment plants*)

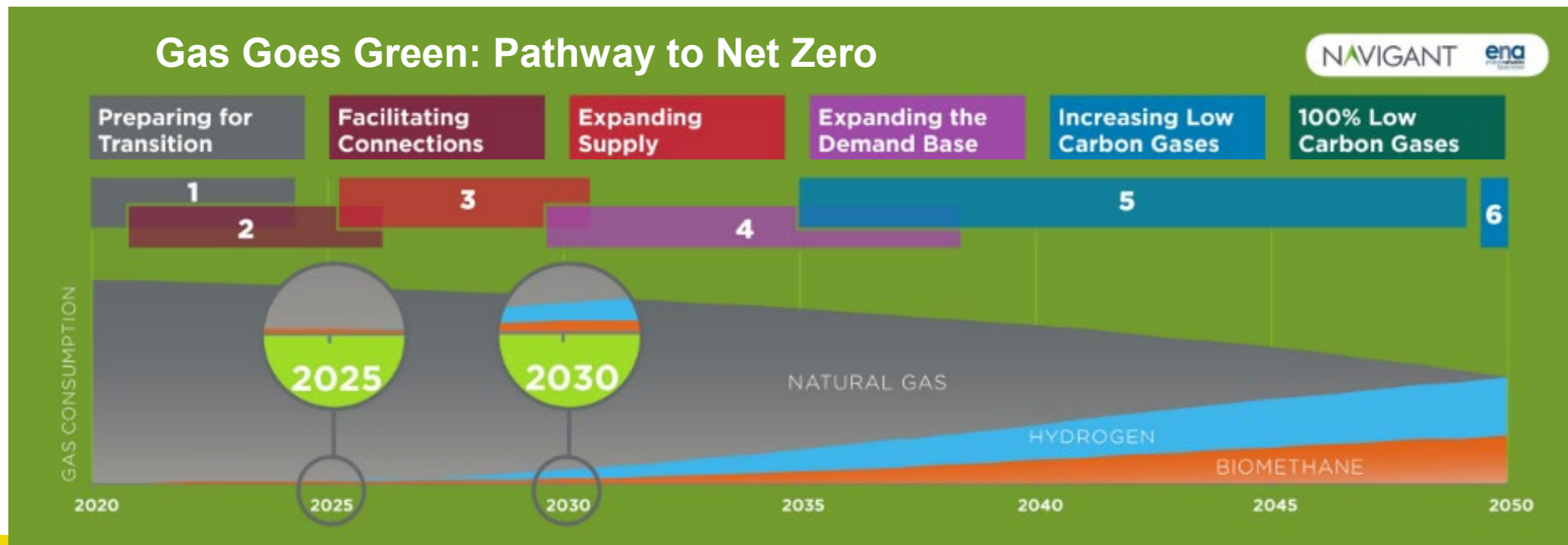
Region	No. of plants	Capacity (Mwe)
North East	12	11
North West	46	34
Yorkshire & Humber	37	32
East Midlands	60	54
West Midlands	63	35
East of England	49	69
South East	33	36
South West	54	37
London	2	2
Scotland	61	40
Wales	38	20
TOTAL	455	370



Source: NNFCC (2021) AD deployment in the UK, annual report (<https://www.nnfcc.co.uk/publications/report-anaerobic-digestion-deployment-in-the-uk>)

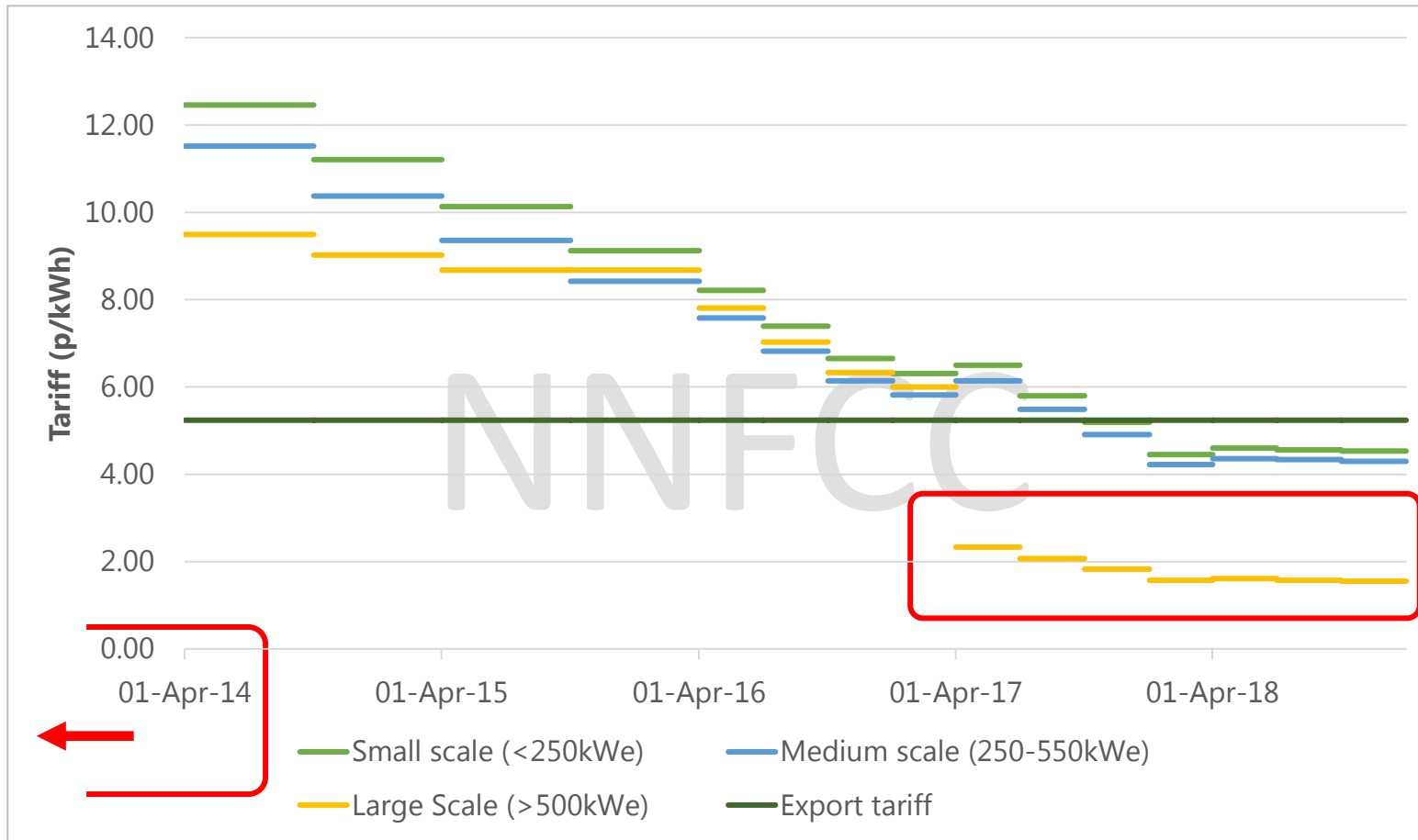
Why consider CHP conversion?

- ✦ Better aligned with the current policy intent, focussing on decarbonisation of the heat sector, energy security and Net Zero
- ✦ Greater efficiencies can be achieved, especially where CHPs are unable to use heat on-site or locally
- ✦ CHPs are ageing, and cost of replacement can be significant
- ✦ Markets may be more attractive and/or more flexible, giving optionality around supply for heat or transport fuel use

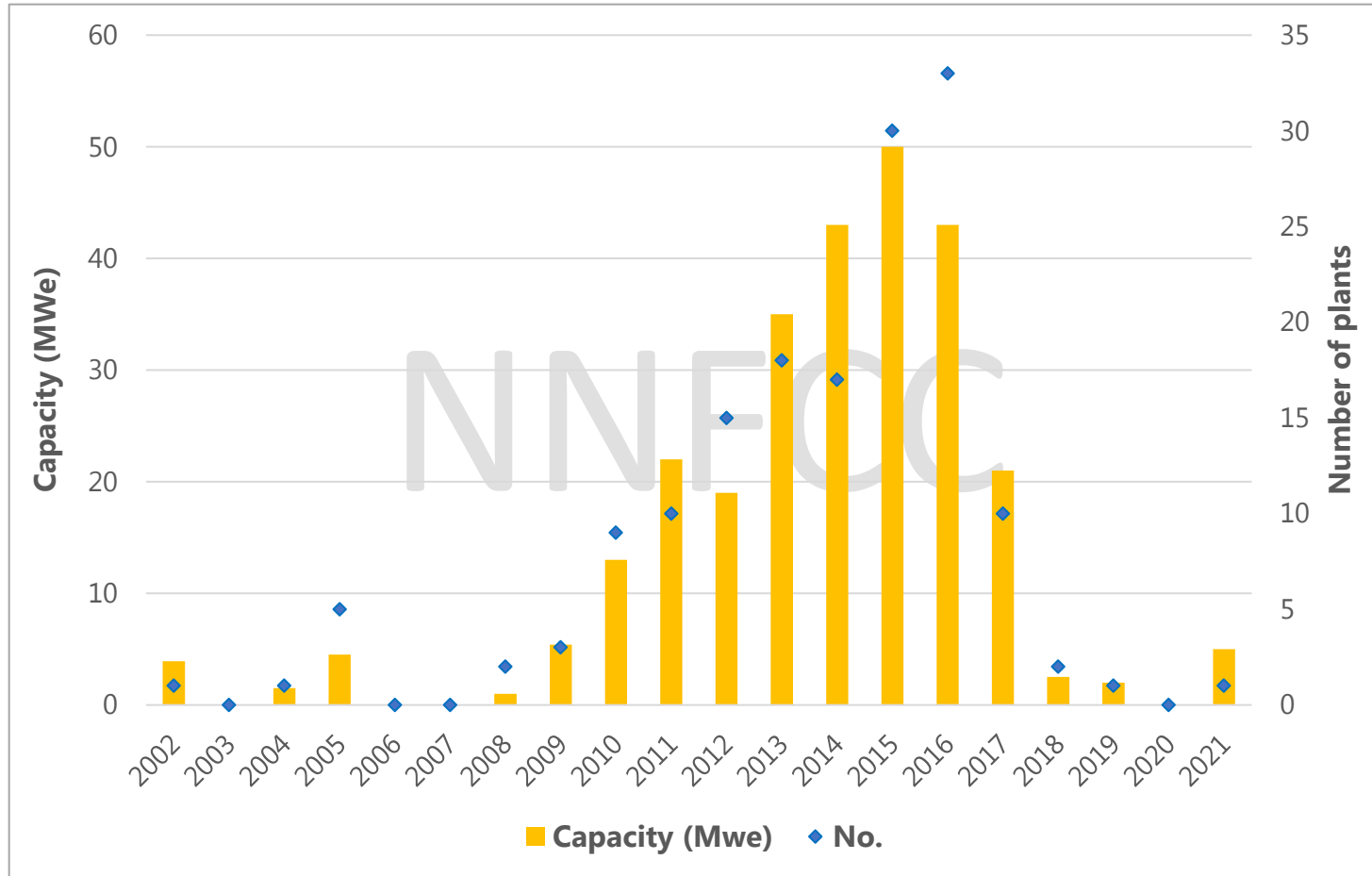


Opportunity analysis

FIT Support levels

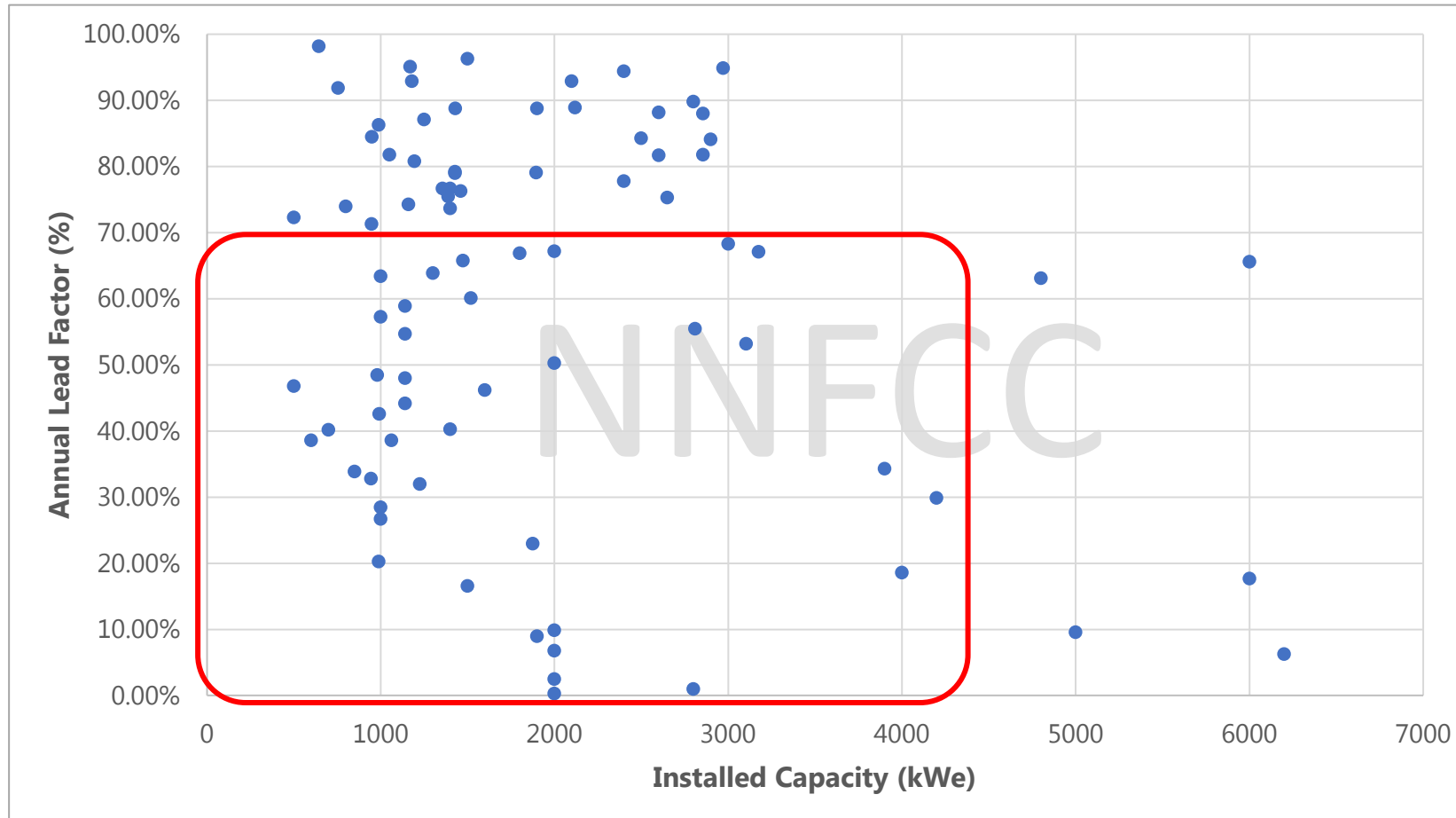


Accreditation Date



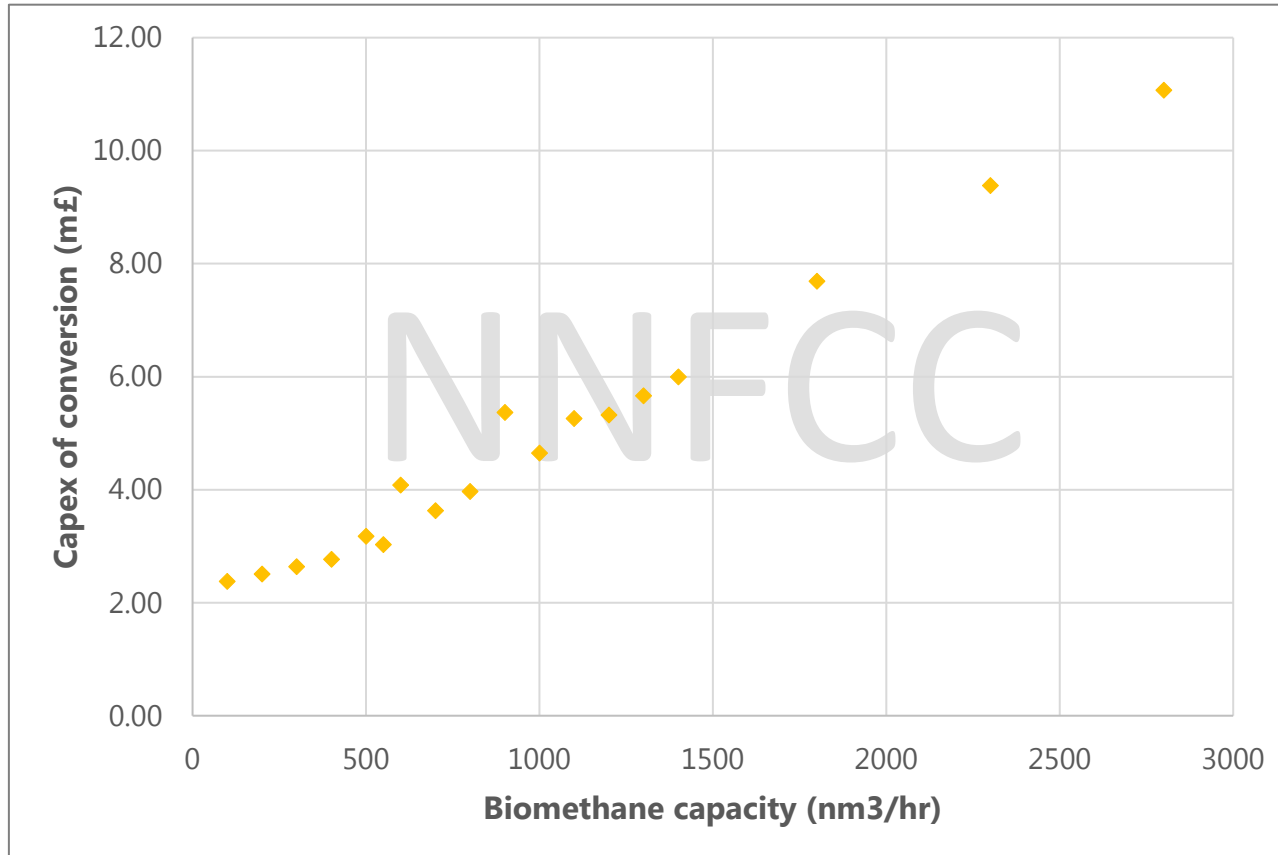
Source: NNFCC (2021) AD deployment in the UK, annual report (<https://www.nnfcc.co.uk/publications/report-anaerobic-digestion-deployment-in-the-uk>)

Plant performance



Source: NNFCC (2021) AD deployment in the UK, annual report (<https://www.nnfcc.co.uk/publications/report-anaerobic-digestion-deployment-in-the-uk>)

Cost of conversion to biomethane



- Conversion costs were calculated for each plant deemed technically feasible, using data gathered from operational sites.
- Includes Capex costs for:
 - Biogas upgrading unit (BUU)
 - Grid entry unit (GEU)
 - Grid connection
 - Labour
 - Fraction of development costs
 - Other relevant costs
- Excludes Capex for AD development (assumed already operational)

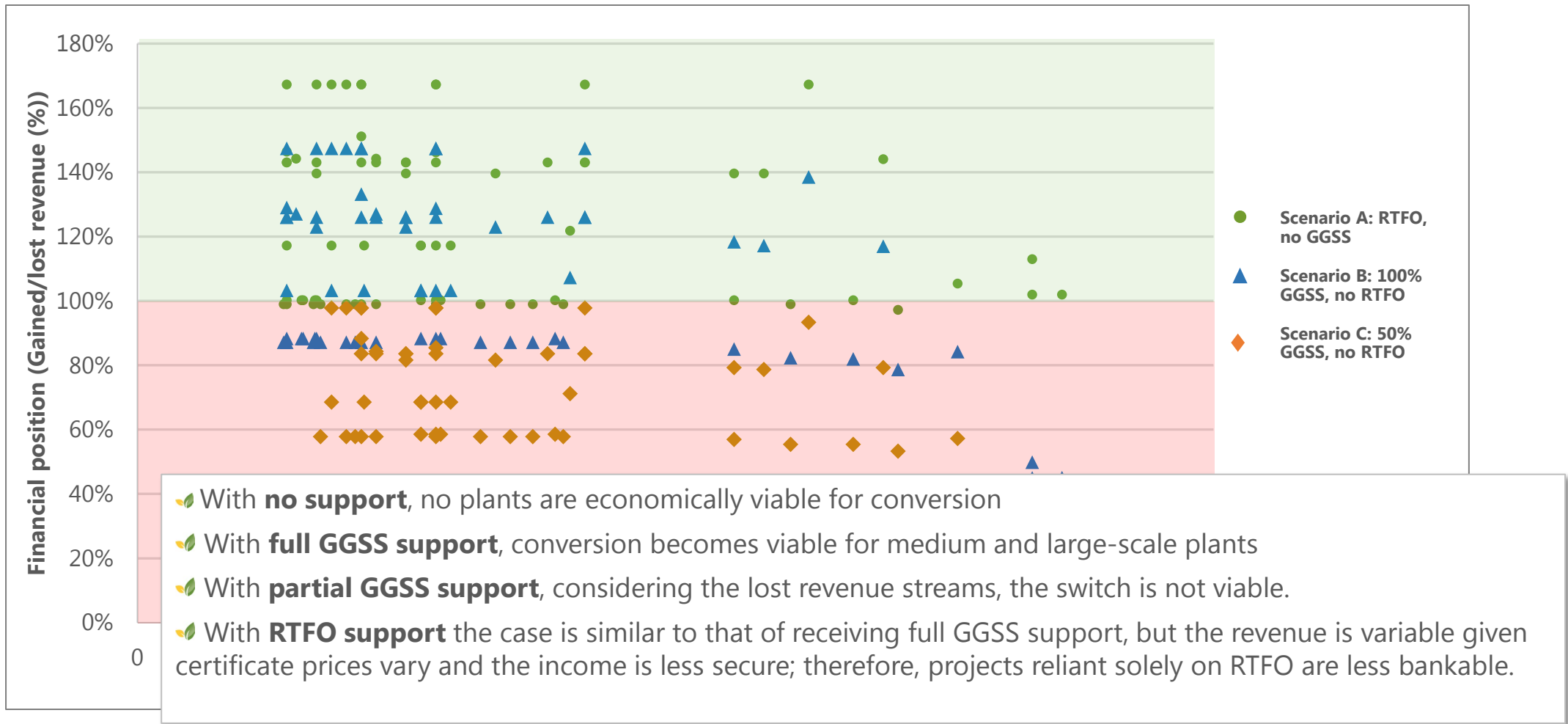
Financial scenario modelling

- As conversion is not supported by GGSS we developed a series of scenarios to understand how **different support mechanisms** may affect the economic viability of switching.

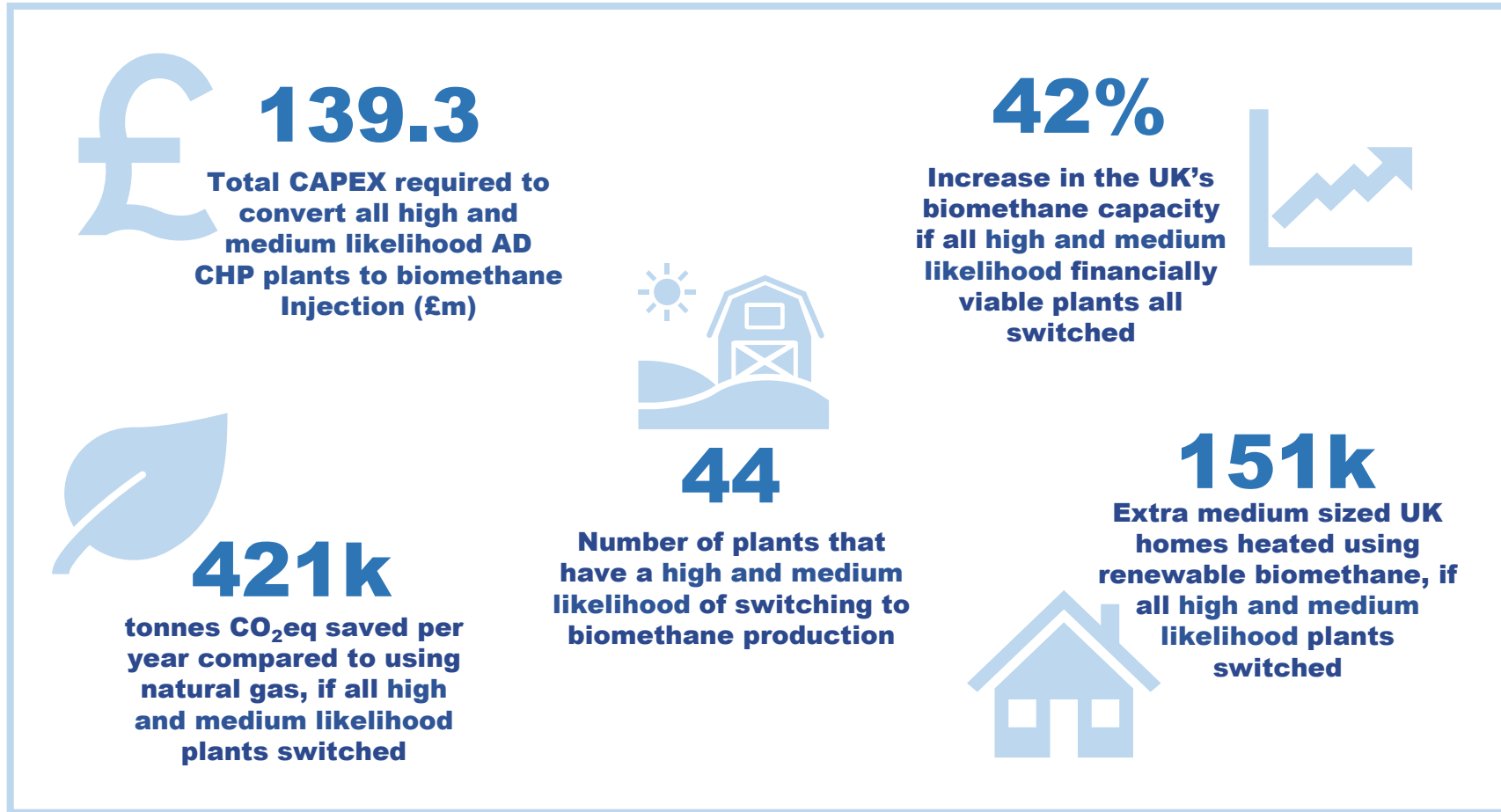
Scenario A	RTFO support, no GGSS
Scenario B	100% GGSS, no RTFO
Scenario C	50% GGSS, no RTFO
Scenario D	no incentive support

- Other revenue streams do not change between scenarios; including wholesale revenue from biomethane sales and Green Gas Certificate (GGC) revenue.*

Financial scenario comparison

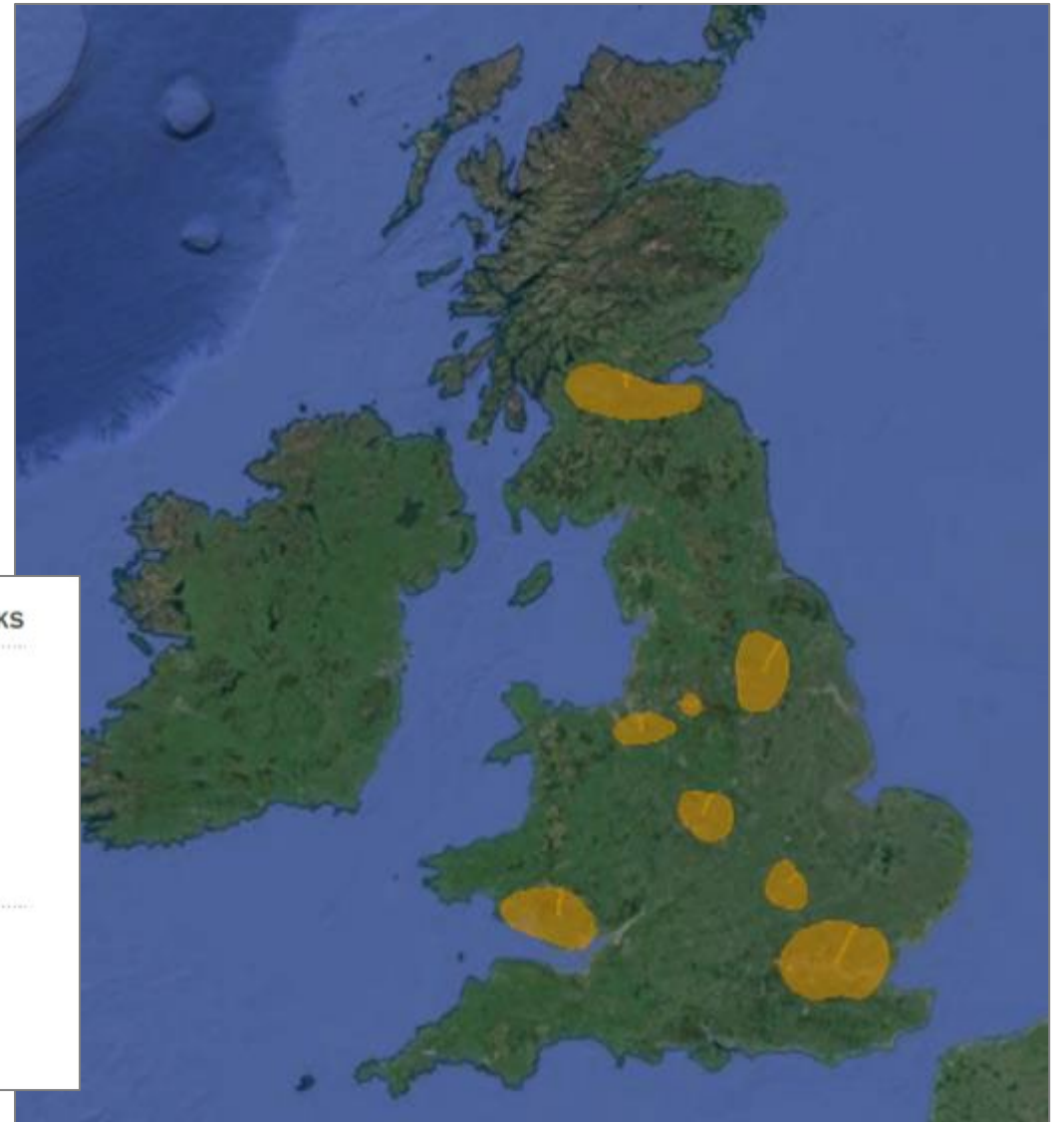
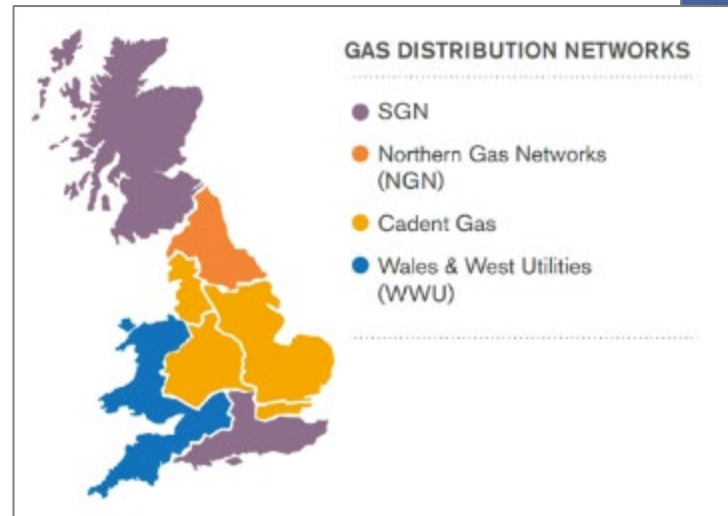


Scale of Opportunity



Clustering of biogas facilities

- 8 clusters were identified in Great Britain for further investigation; distributed across the four network operators.
- Clusters were typically evident around some of the major conurbations, where most waste-fed AD activity is concentrated due to feedstock availability.



Conclusions

- ✦ CHP conversions are a rapid, cost-effective way of accelerating gas grid decarbonisation
- ✦ A number of projects converted from CHP to biomethane injection under the RHI, but support is no longer available.
- ✦ Given the current energy crisis, biomethane demand is high and there is a need to accelerate the rate of growth, to build a more resilient UK energy system. Biomethane can play a significant role in this.
- ✦ 166 plants are deemed technically viable for conversion; an increase of 145% on current production.
- ✦ 44 plants are deemed economically viable for conversion; an increase of 42% on current production.
- ✦ Financial support is required to incentivise switching and to make it financially viable, given conversion costs remain significant and revenue would be lost from FIT and/or RHI.
- ✦ GGSS mid-scheme review is imminent, BEIS are aware of this analysis and will be consider cost/benefit of eligibility criteria.

Thank you!



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