THE ASSOCIATION FOR RENEWABLE ENERGY & CLEAN TECHNOLOGY

Potential for Biogas to Decarbonise Heat

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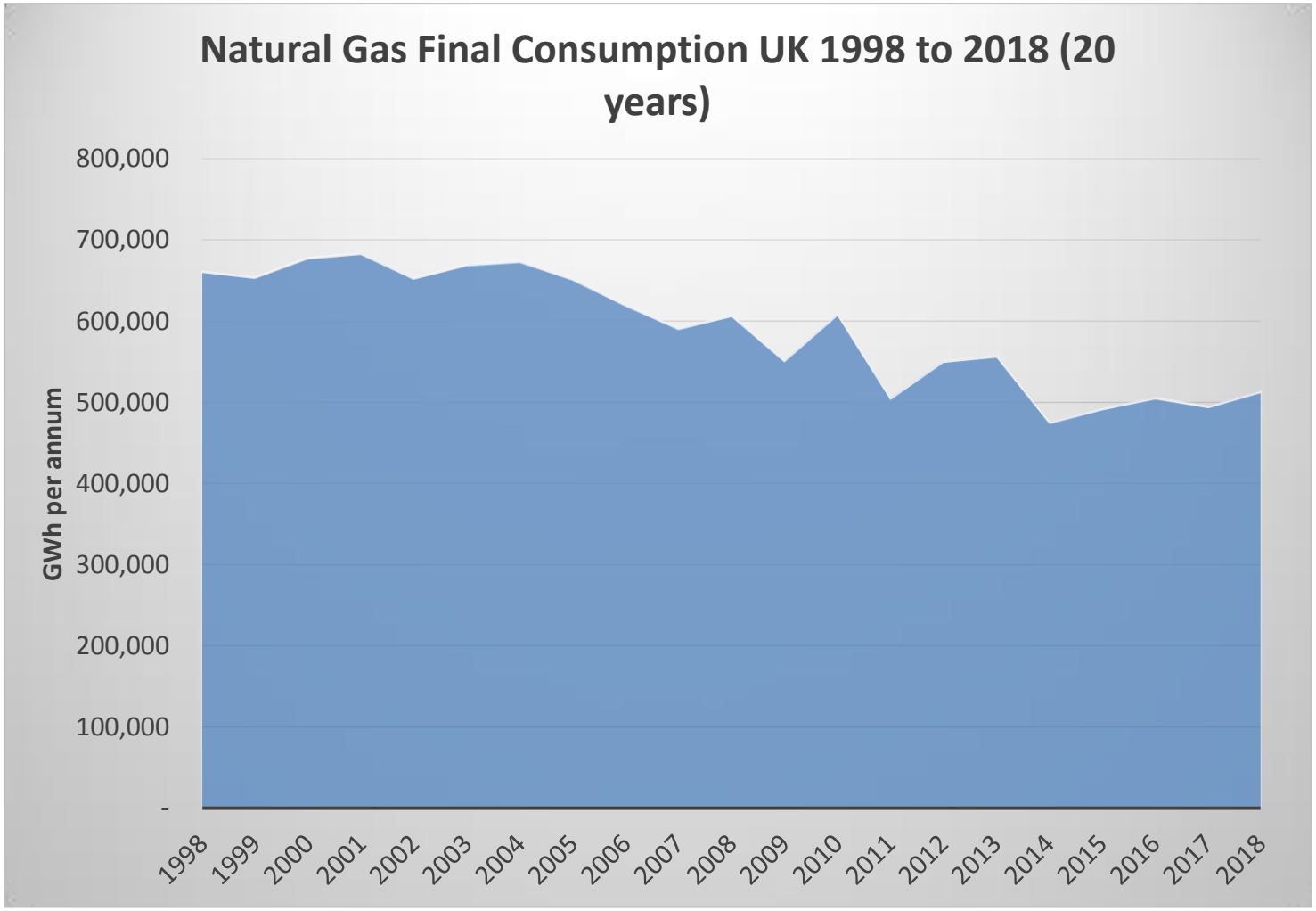
How much gas has the UK been using?

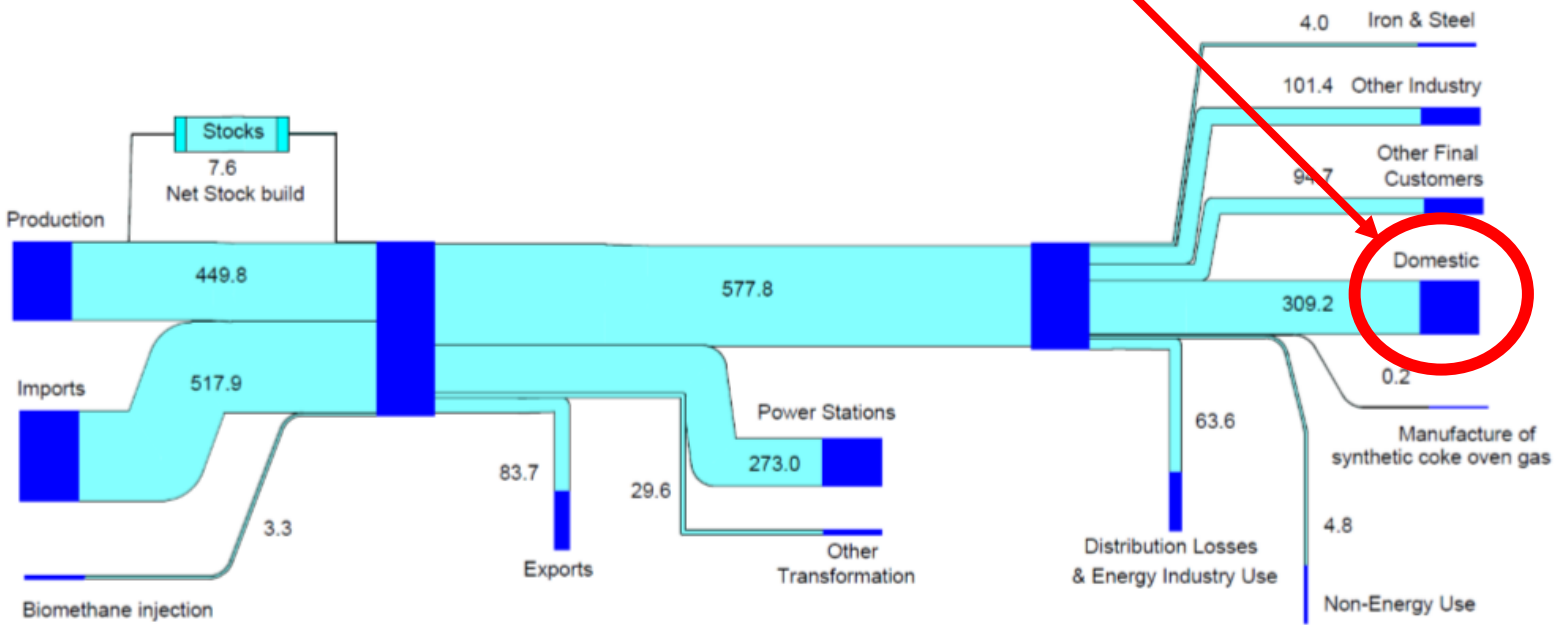


Final natural gas consumption over the past >20 years reduced by just under 30% (DUKES)

How much gas does the UK use for domestic purposes?

36% of gas used in the UK used for domestic heating and cooking

Natural gas flow chart 2018 (TWh)



Note:
This flow chart is based on data that appear in Table 4.1, excluding colliery methane.

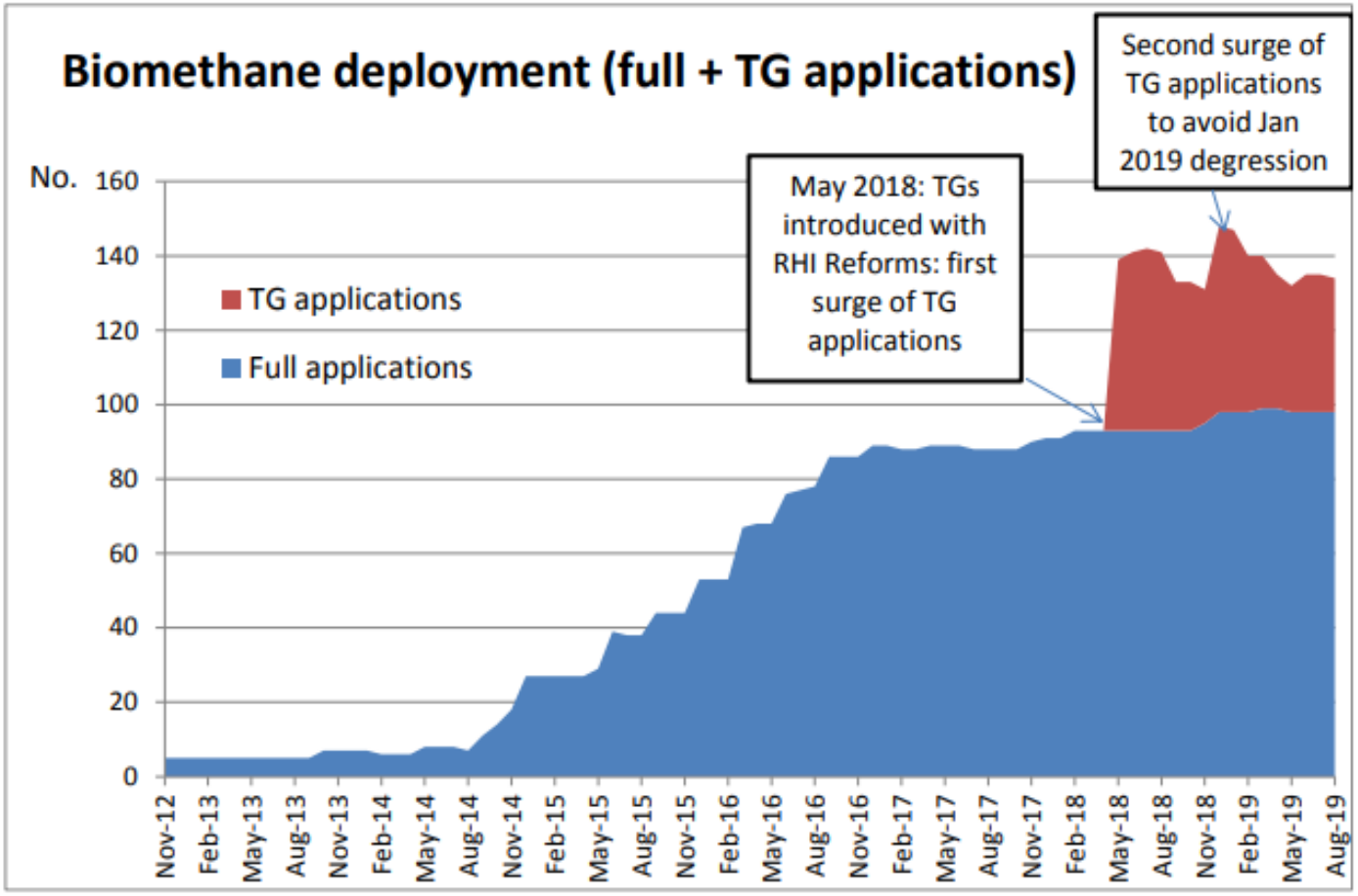
Biomethane development

	No plants	Volumes of biomethane capable of injecting (m^3/annum)	Volumes of biomethane capable of injecting (TWh/annum)
Biomethane projects commissioned under RHI by Dec 2019 (BEIS, Dec 2018, RHI deployment data)	97	424,860,000*	**4.38***
Biomethane projects in the pipeline - applied for a TG (BEIS, Dec 2019, RHI deployment data)	42	175,200,000*	**1.89***
Total	**139**	**~ 600,000,000***	**6.27**

Source: REA, 2020 based on BEIS deployment stats

*Estimate based on average biomethane flow rate of 500 m^3/hour (Tier 1 RHI). 1 m^3 CH_4 = 10.3 KWh

RHI deployment for biomethane



Source: REA, 2019 based on BEIS deployment stats

How to maximise the benefit of biogas for decarbonising UK heat demand?

- Increased deployment of biogas for the decarbonising hard to reach sectors such as domestic heating and transport.
- Continue to support the existing infrastructure to ensure long-term carbon savings.
- Greater drive for energy efficiency to ensure renewables can offer the most significant benefit.
- Recognising the actual carbon benefit of biogas for decarbonisation purposes.

Biomethane projections

Recent estimates on the potential for biomethane by 2026, 2032 and 2050							
Source	By 2026 (TWh/annum)		By 2032 (TWh/annum)		By 2050 (TWh/annum)		
	Heat	Transport	Heat	Transport	Heat	Transport	Power
REA's Bioenergy Strategy, 2019	19	12	31	24	-	-	-
ENA's Decarbonisation Pathways (Balanced scenario), 2019	NA	NA	NA	NA	60 + 4 (Buildings + industry)	109	20
Totals	**31** (all from AD)		**55** (2.8 TWh from gasification, the remainder from AD)		193 (121 TWh from gasification, **57 TWh from AD** and 15 TWh from Power-to-Gas)		

Source: REA, 2020 based on REA's and ENA's relevant reports

Decarbonisation target vs Energy Target?

- Biogas has the ability to drive considerable carbon savings, further than any other non bioenergy technology.
- Committee on Climate Change highlighted ‘Carbon Capture is a necessity, not an option’.
- When Carbon Capture, Usage and Storage (CCUS) is paired to bioenergy technologies it can drive considerable carbon savings.
- The REA is pushing for Government to support Bioenergy Carbon Capture and Storage (BECCS).

What is biogas' decarbonisation potential?

- RED II has published 'typical' GHG emissions from different types of AD. The Sustainability Criteria we use today is broadly formed around RED I.
- Including GHG abatement savings of carbon capture storage and usage (REA data sourced from members, 2019):

Typical GHG emissions and savings – mid-case scenario for biomethane with CCUS (REA, 2019 and RED II Annex VI)			
	g CO_2/MJ	gCO_2/kWh	GHG saving (%)
100% manure biomethane	-134	-482	267
100% maize biomethane	-5	-17	106
100% biowaste biomethane	-21	-75	126
Manure 80% - Maize 20%	-47	-169	159
Manure 70% - Maize 30%	-33	-118	141
Manure 60% - Maize 40%	-24	-86	130

Thank You

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