THE ASSOCIATION FOR RENEWABLE ENERGY & CLEAN TECHNOLOGY

REA Bioenergy Members Forum

Wednesday 19th February 2019

Kindly hosted by **MHA MacIntyre Hudson**

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Welcome from

MHA MacIntyre Hudson

Rachel Nutt,

Head of Renewable & Sustainable Energy

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Bioenergy's Role in Decarbonising Heat

Setting the Context

Policy Context

- Heat Decarbonisation Roadmap Required to be published in 2020
- Number of consultations expected to come out soon concerning reform to the RHI, what will come after the RHI and building Standards.
- Initial announcements maybe included in upcoming Budget (confirmed 11th March)
- New Secretary of State
- COP 26 in November

REA Context

- Trailing New Sector Day Format – theme focused
- Want to be able to foster more unified messaging across sectors to ensure Bioenergy's role in heat decarbonisation is recognised
- Identifying positive messages about the whole industry to magnify its importance.
- Encourage cross sector learning and discussion

REA's Current Messages Around Heat

1) Time Limited Extension to the RHI
2) A new mechanism needed to support heat decarbonisation past 2021 (E.g. Heat-feed in premium scheme)
3) Take opportunity to reform Agricultural Support to promote bioenergy use and domestic bioenergy feedstock cultivation
4) Government Backed Low interest loans for heating
5) Effective Taxation system that slowly penalises dirtiest fossil heating fuels
6) Introduce Green Gas Obligation to meet a GHG reduction target
7) Amend Energy Saving Opportunity to focus on carbon emission reductions, not just power
8) Recognise all forms of renewable heating in Future Homes Standard
9) Variable Tax benefits for those with high energy efficiency standards (Council Tax, Business Rates, Stamp Duty)
10) Address Barriers to Heat network deployment

Running Order

Update from BEIS - Tunde Ojetola, BEIS

Series of short presentations from different bioenergy heat technologies:

- Biomass Heat - *Alasdair Peppe, Dunster Energy*
- Biogas - *William Mezzullo, Foresight Group*
- BioLPG - *Andy Parker , Calor Gas*
- Bioenergy Potential in Domestic Off Gas Grid Properties – *Ian Waller, In Perpetuum*

The above presentations are meant to foster debate and raise questions. They do not represent REA positions, but messages within the bioenergy heat sphere. This is therefore about informing the REA's way forward.

Networking Break (15 min)

Discussions Forum around challenges and key messages

Questions for Consideration - Heat

1. How does the REA create a positive massage to ensure bioenergy's role in heat decarbonisation is recognised?

2. How do we ensure the lessons learnt from the RHI are carried through to new heat policy?

3. What messaging does the sector need to focus on around feedstock availability and sustainability?

4. What other market barriers do we need to be focusing on – either sector specific or relevant across the whole Bioenergy Heat Sector?

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Update from BEIS

Tunde Ojetola, BEIS

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Biomass Heat

Alasdair Peppe, Dunster Energy

Solid Biomass Heat Potential

Alasdair Peppe, Dunster Energy

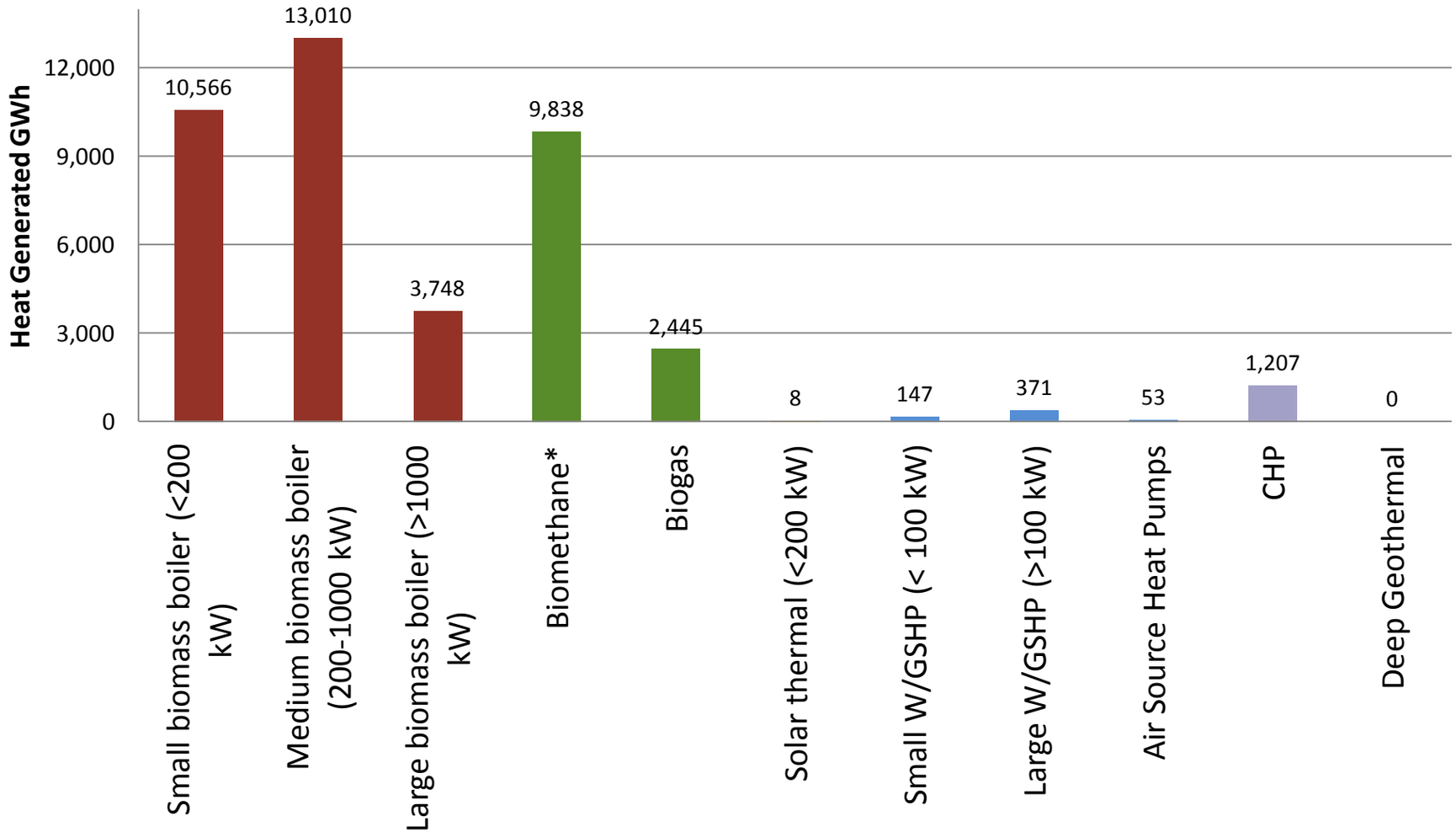
DUNSTER ENERGY

WHA Wood Heat Association

Biomass Heat Deployment – Non Domestic RHI

Biomass Heat has been the largest recipient of the ND RHI to date and accounts for ***66% of renewable heat so far generated by the scheme.***

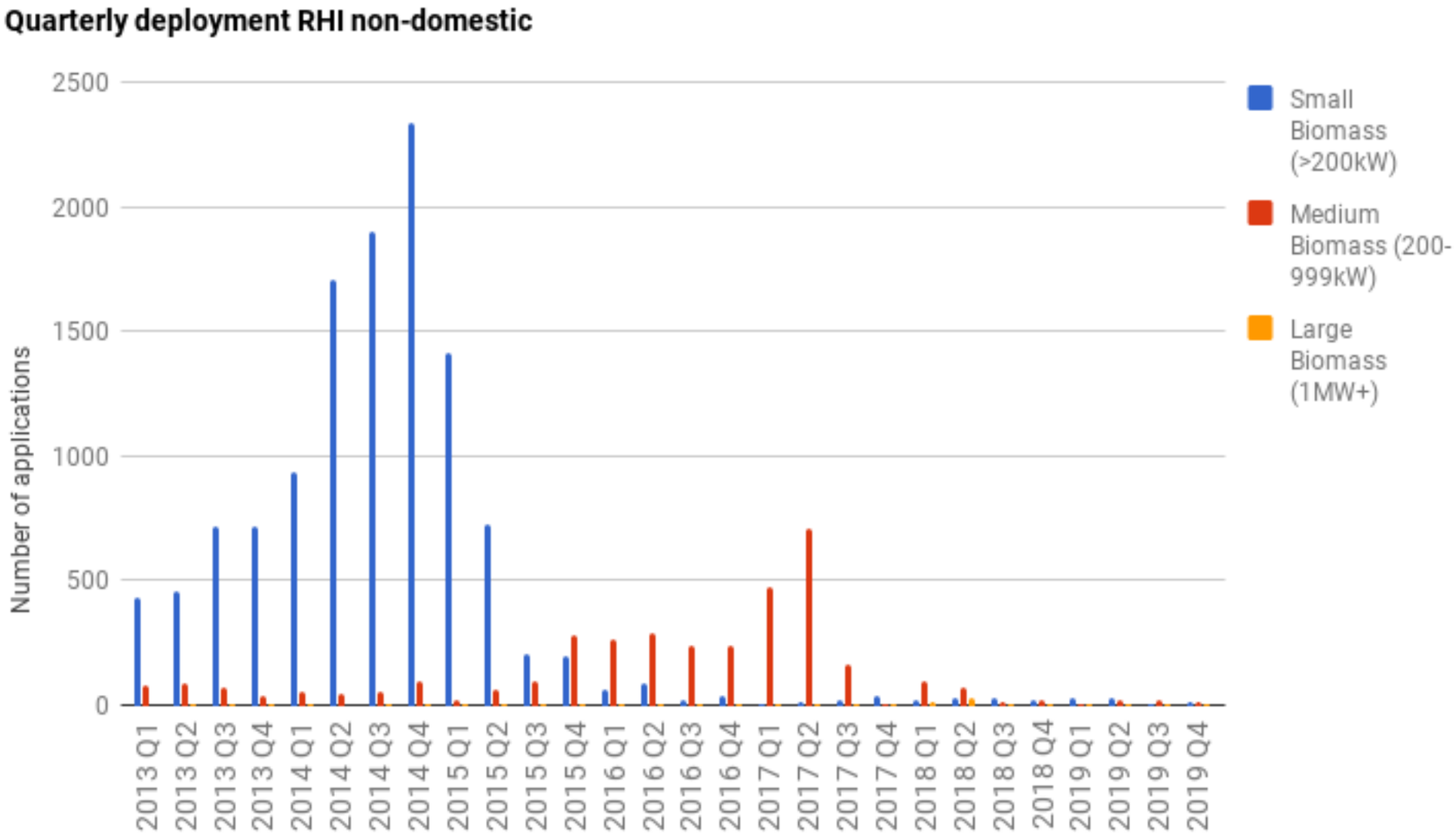
Heat Generated *By Technology Nov 2011 - December 2019*



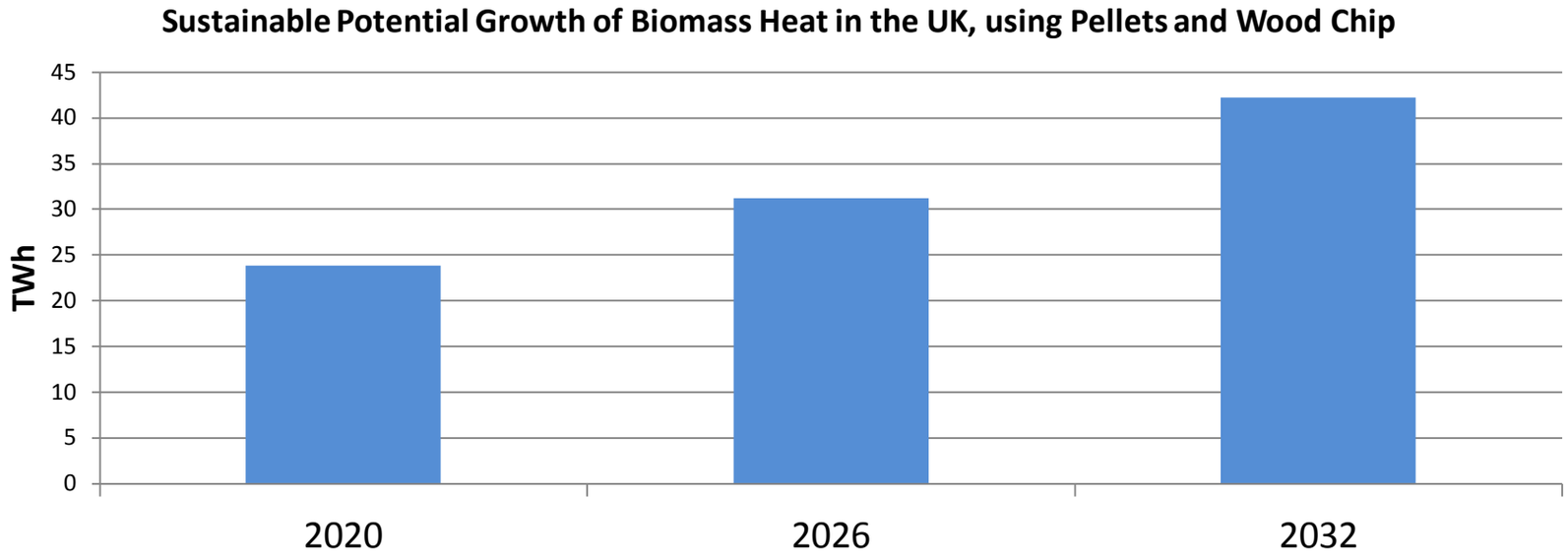
Source: BEIS

Deployment of Biomass has Stalled under the ND RHI

Biomass heat deployment slowed following RHI degression and policy uncertainty, reducing the levels of heat decarbonisation that could have been achieved to date.



Potential Growth of Biomass Heat – REA Bioenergy Strategy



Sustainable level of deployment at around 700 MW/year would allow for market and supply chain development (as achieved during the RHI).

If installation rates grew to this level by 2025 and then continued at that level until 2032, the additional contribution to energy supply would grow from the current level of around 24 TWh (85 PJ/year) to over 42 TWh (150 PJ/year) by 2032.

Feedstock demand demonstrated to be met by increases in domestic feedstock availability, as modelled by BEIS to 2030, and continued feedstock import.

Key Benefits to Biomass Heat

- Direct conversion to heat is most efficient use of biomass
- Available now – including further reduced emissions
- One of the lowest cost options for renewable heating
- Suitable for existing, hard to heat, buildings
- Reduces extra requirements on electricity infrastructure
- Development of local supply chains, which are well adapted to the dispersed nature of UK forest resources, can help stimulate improved forest management and afforestation, including some new planting on unprofitable agricultural land
- Key Technology for powering new Heat Networks and district heating systems.

What's Required?

- Clear indication of post 2021 policy support in order to facilitate continued deployment

- Time limited extension to the RHI in order to allow time for transition to new heat policy and given expected underspend under the RHI.

- Longer term policy that creates a level playing field for renewable heat systems competing with fossil fuel alternatives

- Supportive tax policies and building regulations that encourage installations of renewable heat systems

- Recognition of the role that Biomass heat has to play in heat decarbonisation, especially in off gas grid areas and situations requiring high heat loads.

Case Study – Beaulieu National Motor Museum – Providing Efficient Heat across a Commercial Complex

National Beaulieu Motor Museum replaced their 600 kW oil boiler for a 400 kW woodchip biomass boiler in 2015.

The system provides water and space heating across the museum complex, including museum, the vehicle collection, restaurant, learning centre and main administrative offices.

Provides 90% of complexes heat demand throughout winter.

Design includes building management system combined with energy efficient distribution pumps – allowing for efficient heating that uses less heat and fuel.

The switch from oil to biomass provides savings on heating bills, while support through the ND RHI has helped improve the return on capital expenditure.

Estimated annual saving of 385 tonnes of CO_2 equivalent per annum.

European example Demonstrates that Biomass Heat has a significant role to play in Heat decarbonisation

Bioenergy Europe 2019 Statistics indicate that Bioheat (including all bioenergy heat applications) accounts for 16.9% of all generated heating and cooling in 2017 across EU28.

Solid Biomass Accounted for 91% of bioheat production across Europe – making it the largest contributor to heat decarbonisation.

Especially effective within European markets with well established heat Network Sectors and accessibility to feedstocks.

Table 3 Biomass Used for Heat by Fuels and Sectors in EU28 in 2017 (ktoe)

	Solid Biomass	Renewable Municipal Waste	Biogas	Liquid Biofuels	Total
Industrial Sector	21.456	688	499	83	22.725
Residential Sector	43.531	7	391	4	43.933
Derived Heat Sector	10.952	2.905	734	100	14.690
Commercial & Services Sectors	2.972	217	1.434	168	4.792
Other Sectors	1.766	0	539	36	2.341
Total	80.676	3.816	3.597	392	88.481

Source: Eurostat

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Biogas

William Mezzullo, Foresight Group

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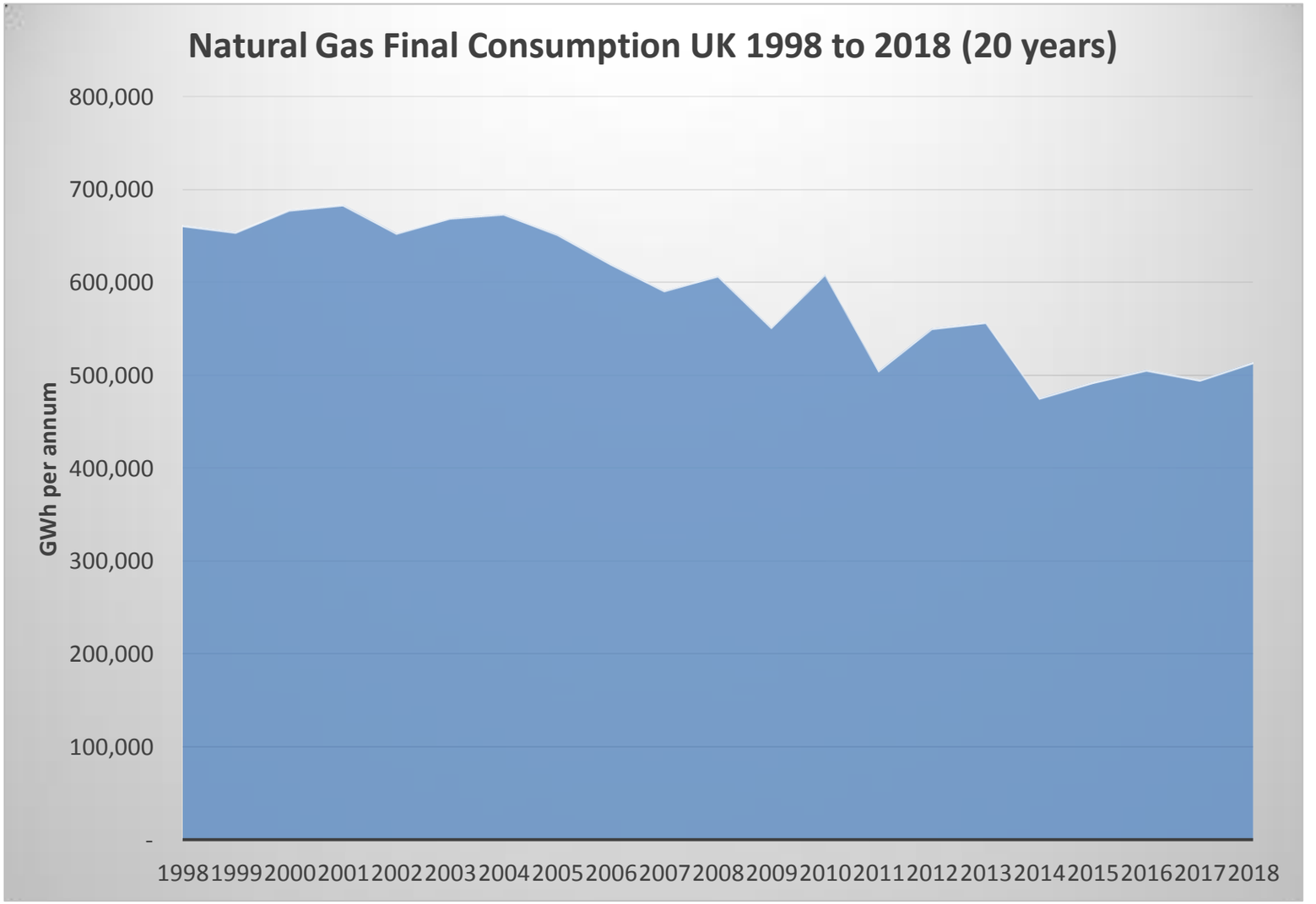
Potential for Biogas to Decarbonise Heat

William Mezzullo – Foresight Group
REA Biogas Chair

How much gas has the UK been using?

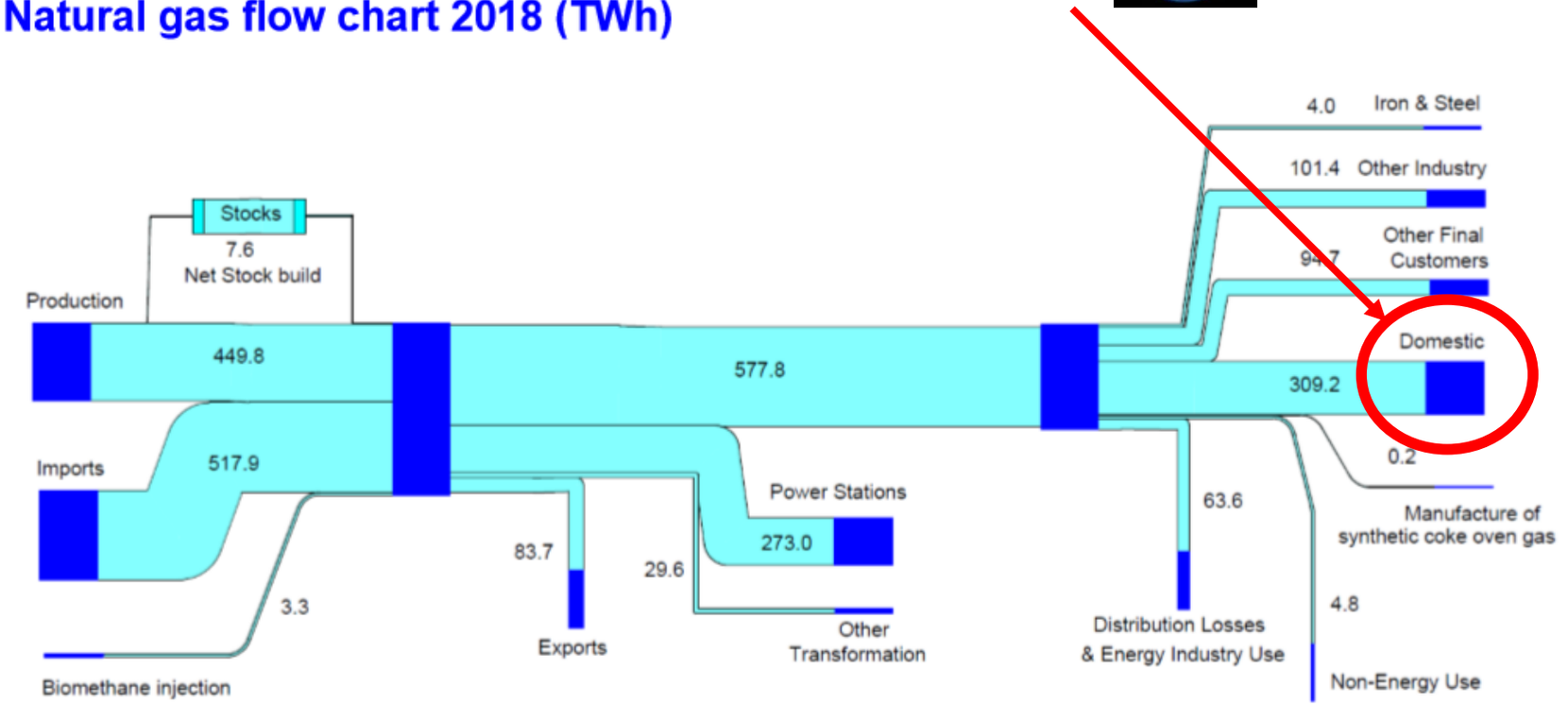


Final natural gas consumption over the past >20 years reduced by just under 30%

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)



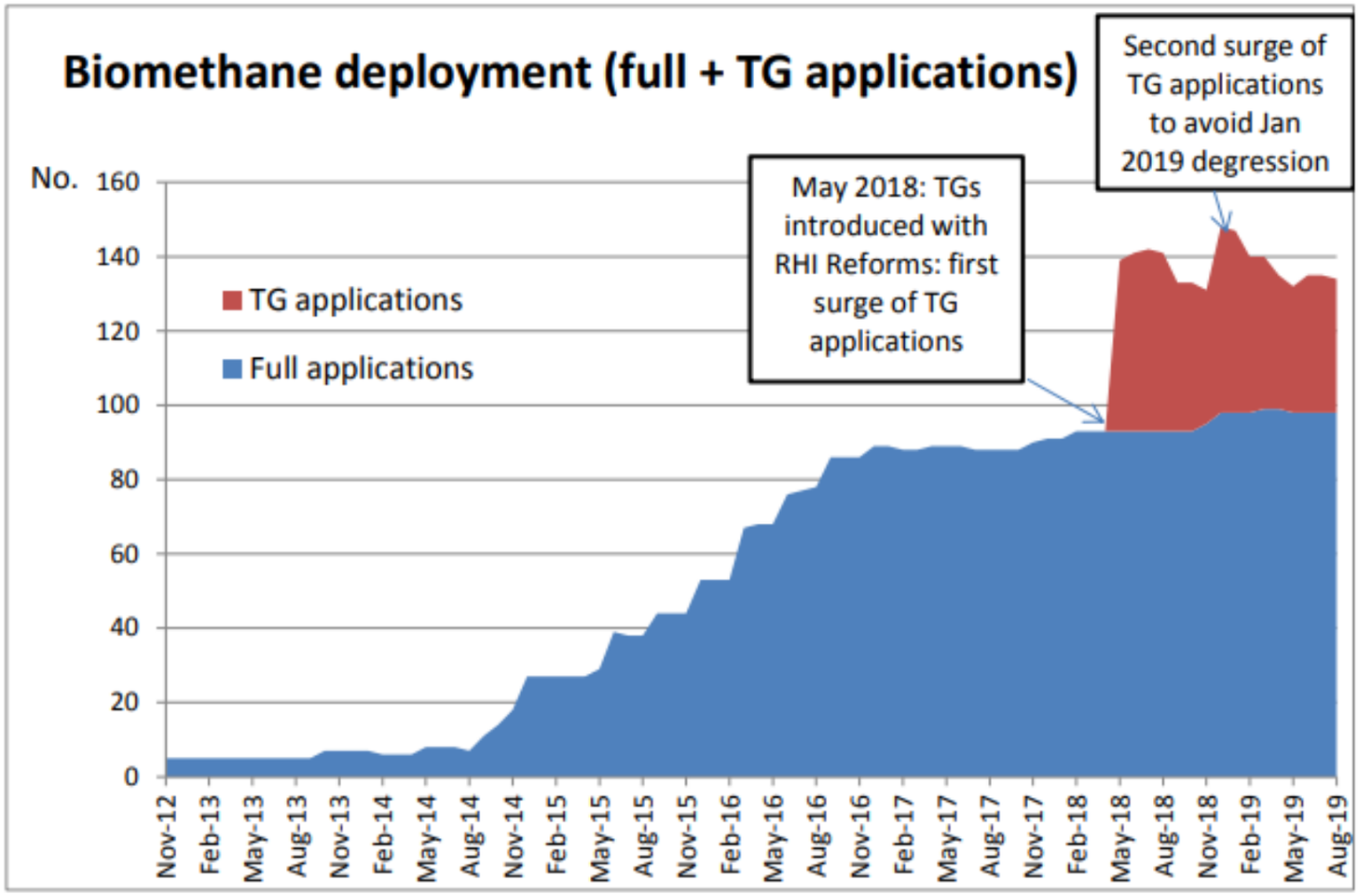
Note:
This flow chart is based on data that appear in Table 4.1, excluding colliery methane.

Biomethane development

	No plants	Volumes of biomethane that are 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**

*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: BEIS RHI 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)		

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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Andy Parker

Andy Parker, Calor Gas

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Bioenergy Potential in Domestic Off Gas Grid Properties

Ian Waller, InPerpetuum

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Break

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Heat Discussion

Questions for Consideration - Heat

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2. How do we ensure the lessons learnt from the RHI are carried through to new heat policy?

3. What messaging does the sector need to focus on around feedstock availability and sustainability?

4. What other market barriers do we need to be focusing on – either sector specific or relevant across the whole bioenergy heat sector?

Questions 1

1. How does the REA create a positive massage to ensure bioenergy's role in heat decarbonisation is recognised?

- *Where are the areas of overlap and divergence between the bioenergy technologies? How do we in our sector groups reconcile differences?*

- *Government remains primarily focused on electrification and potential of hydrogen. How do promote the importance of Bioenergy within this agenda?*

- *What further sectors can we draw in to make this case?*

Questions 2

How do we ensure the lessons learnt from the RHI are carried through to new heat policy?

- What lessons need to be highlighted?
- What role does industry play in highlighting these lessons
- What practical steps could the REA consider to ensure these lessons are leant?

Questions 3

What messaging does the sector need to focus on around feedstock availability and sustainability?

- How do we combat claims that there isn't enough feedstock to grow the sector

- How to demonstrate the pathway argument – that growing today’s sector develops supply chains etc.

Questions 4

What other market barriers do we need to be focusing on – either sector specific or relevant across the whole Bioenergy Heat Sector?

Thank you

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Further Political Context

New Secretary of State , BEIS **- Rt. Hon Alok Sharma MP**
Previously SoS for International Development (Jul 2019 – Feb 2020)
Minister of State for Housing, Communities and Local Government (Jun 2017 – Jan 2018)
Also appointed COP 26 President
Minister Kwasi Kwarteng remains in place

New Secretary of State, DEFRA - Rt. Hon George Eustice MP
Previously minister for DEFRA and farming background.
Written an opinion piece in the Guardian last year stating that the UK couldn't ignore environmental standards in favour of watered-down trade deals with the US

New Chancellor of the Exchequer, Rt. Hon Rishi Sunak MP
Promoted from Minister in HM Treasury
Has had roles in DEFRA Select Committee and PPS to BEIS in 2017.
Dr. Nina Skorupska recently met with him to highlight REA Messaging – especially around Heat!