

REA Bioenergy Strategy Launch

Delivering the UK's Bioenergy Potential

*5th September 2019,
Grand Committee Room, Palace of Westminster*

**Dr. Adam Brown, Author
Energy Insights Ltd**

Summary

- Bioenergy has grown rapidly stimulated by enabling policy measures, and already plays a major role in renewables in the UK, but progress is at risk as these measures come to an end.
- Bioenergy can play an essential role in the future low carbon economy, providing 16% of UK energy by 2032, based on established technologies and some new strategic options including BECCS
- This increased bioenergy contribution could lead to GHG savings of over 80 MTCO₂e/year by 2032, enough to bring UK emissions back on track. It would also bridge the “clean electricity” gap.
- A range of policy and other actions are needed to enable this growth of sustainable bioenergy including specific sectoral support measures in heat, transport and the electricity sectors, and supporting the development of BECCUS
- These measures should be complemented by a progressive increase in carbon prices across the energy economy; reaching £70-80/t CO₂ by 2026, and over £120 by 2032.

REA Bioenergy Strategy - Objectives

An industry-led strategy for bioenergy in the UK

1. Spelling out why Government and stakeholders need to care about Bioenergy,
 - *Building on current progress to realise short term GHG savings and other benefits*
 - *Role in achieving decarbonisation targets by 2032 and in a Net Zero scenario.*
2. Identifying the contributions that bioenergy can make in a number of policy areas while recognising and addressing concerns that have been raised around sustainability and air quality associated with bioenergy.
3. Setting out a route and policy recommendations for delivering bioenergy potential in the medium and longer term

Approach

Project Oversight Panel

Funders, Civil Servants and Academics from Supergen Bioenergy Hub

Seven Working Groups

Power	Heat	Transport	Green Gas
Sustainability	Gasification	Bioeconomy	

Public Call for Evidence in January and February 2019

Cross-sector full day workshops with REA members

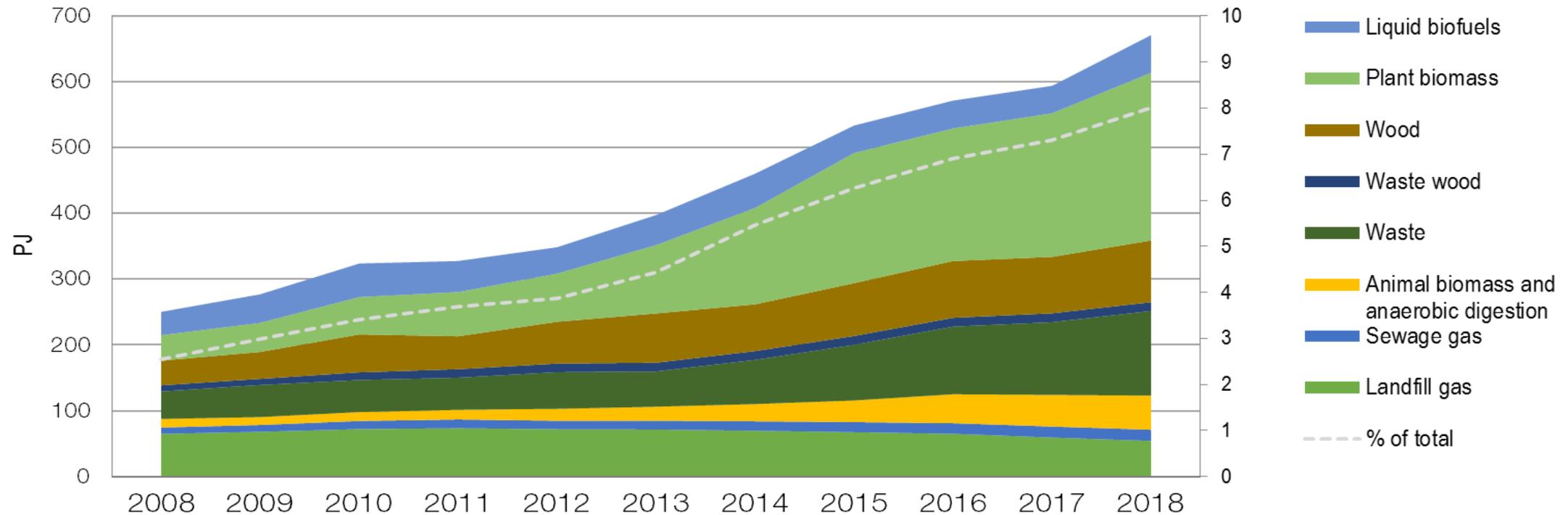


Over 50 industry, academic and government stakeholders fed views into the strategy, These Included:

Advanced Plasma Power (APP)	Energy Network Association	Plasco Conversion Technologies
AMP Clean Energy	Energy Technologies Institute (ETI)	PRIMA
Anaerobic Digestion Biogas Association (ADBA)	Ensus	Privilege Finance
Argent Energy	Enviva	Progressive Energy Limited
AvantiGas	Estover Energy	re:heat
BEIS	Federation of Petroleum Suppliers	Reliagen Energy Ltd.
Bioenergy Infrastructure Group	Fichtner Consulting Engineers Ltd.	Renewed Carbon
Biomass Power Ltd.	Forestry Commission	Severn Trent
Cadent	Glennmont Partners	SGN
Carbon Capture & Storage Association (CCSA)	Green Gas Certification Scheme	Supergen Bioenergy Hub
Centre for Hydrology and Hydrology	Industrial Biotechnology Innovation Centre (IBioIC)	Sustainable Biomass Program (SBP)
Centrica plc	Inperpetuum	Syngas Products
CNG Services Limited	MGT Teeside	UK Liquid Petroleum Gas
CoGen	National Farmers Union (NFU)	UK Pellet Council
CPL Industries Limited	Natural Gas Vehicle Network	UKRI BBSRC
DfT	NNFCC	US Industrial Pellet Association (USIPA)
Drax	OFTEC	Valmet
Dunster Energy	Olleco	Velocys
Eco2		

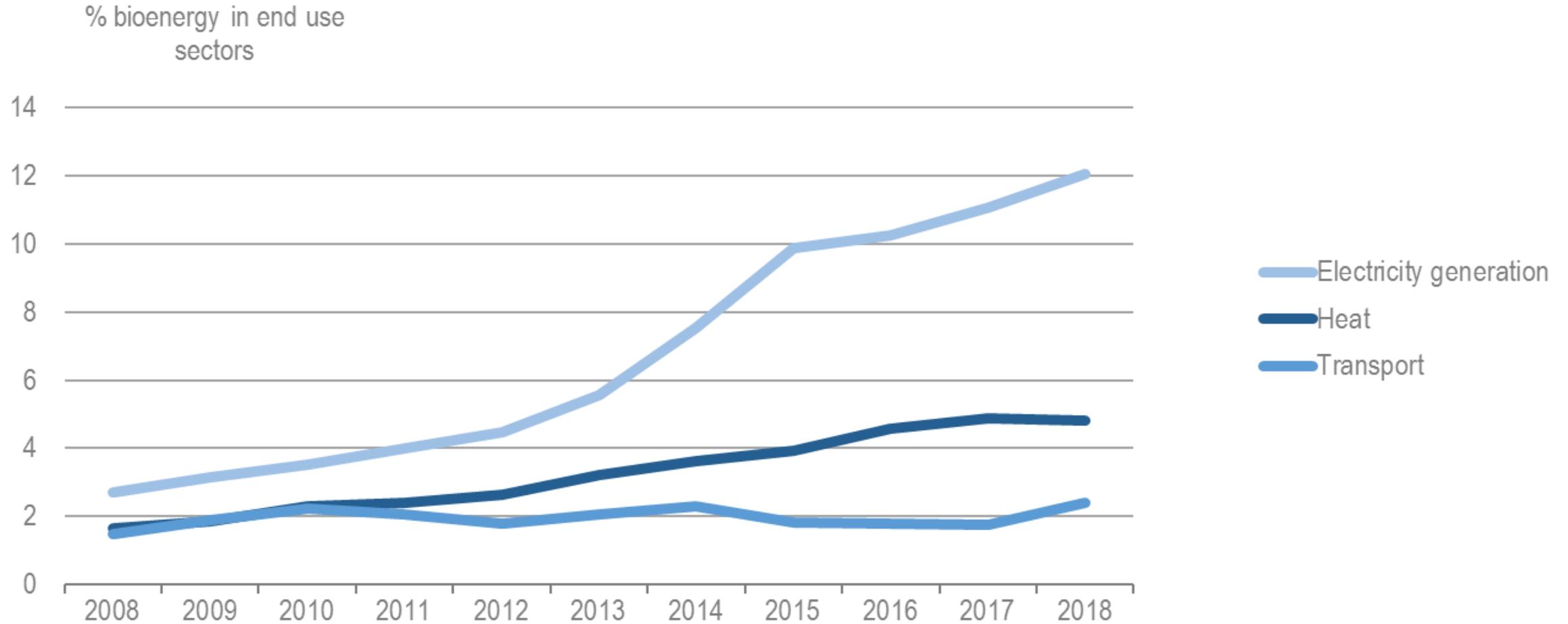
Bioenergy Has Grown Strongly Over Last 10 Years

- Overall GHG savings around 20MTCO₂e/year – c.4% of UK emissions
- More than 46,000 jobs in 2017. Turnover - £6.5 Bn/year

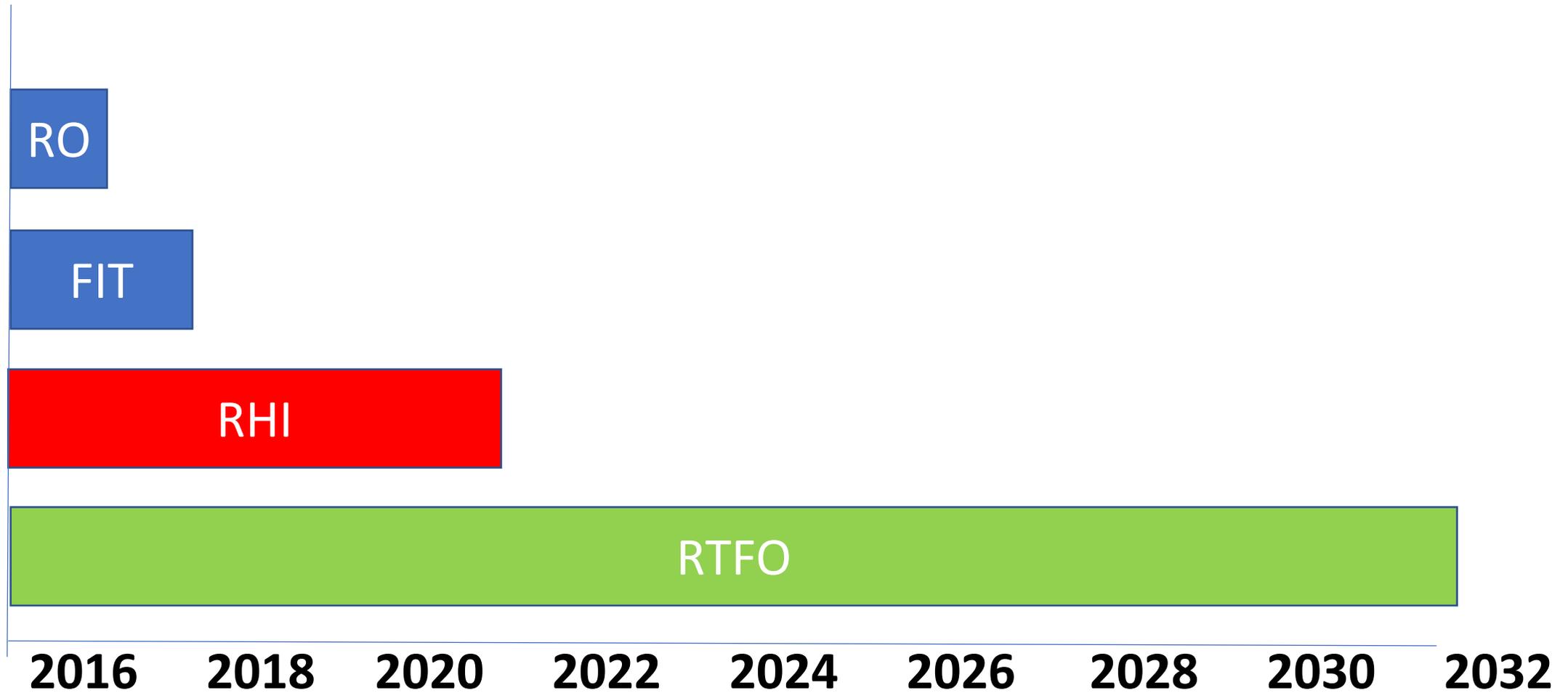


Source: BEIS Digest of Energy Statistics 2019

Bio-electricity - the Fastest Growing Sector



The Enabling Policy Framework is Ending



Bioenergy and the Low Carbon Economy

- Reduces GHG emissions in heat, transport and power sectors using established technologies, often lowest cost low carbon options in their sector along with some new technologies
- Opportunity for bioenergy with CCUS as “negative emission” energy
- Supports wider low carbon strategy by reducing the 72 TWh gap in low carbon electricity generation
 - Providing non-electricity low carbon solutions for heat and transport, reducing pressure on low carbon electricity generation and distribution
 - Biopower provides low cost, financeable alternative to nuclear power with no long term waste disposal issue
- Facilitates emission reductions from waste management and agriculture
- Stimulates forest management and planting
- Lays the ground for wider bioeconomy in terms of key enabling technologies, supply chains, sustainability governance

UK Bioenergy - Opportunities

- Expand contribution to immediate carbon savings based on recognised and affordable technologies with significant other benefits
- Develop and deploy other “no regrets” options which can lead to immediate ghg and other benefits and insurance and diversity to long term direction
- Provide forward pathways towards technologies likely to be needed in long term future:
 - Bioenergy with CCS or CCU
 - Biofuels for long-haul transport

Bioenergy Opportunities by Sector

Heat

- Chip and pellet boilers
- Biomethane from AD
- Biobased liquid fuels
- Bioheat for heat networks
- Thermal biomethane
- Biopropane

Transport

- Expansion of use of bioethanol and biodiesel, including E10
- Biomethane for transport
- Biofuels for aviation and shipping

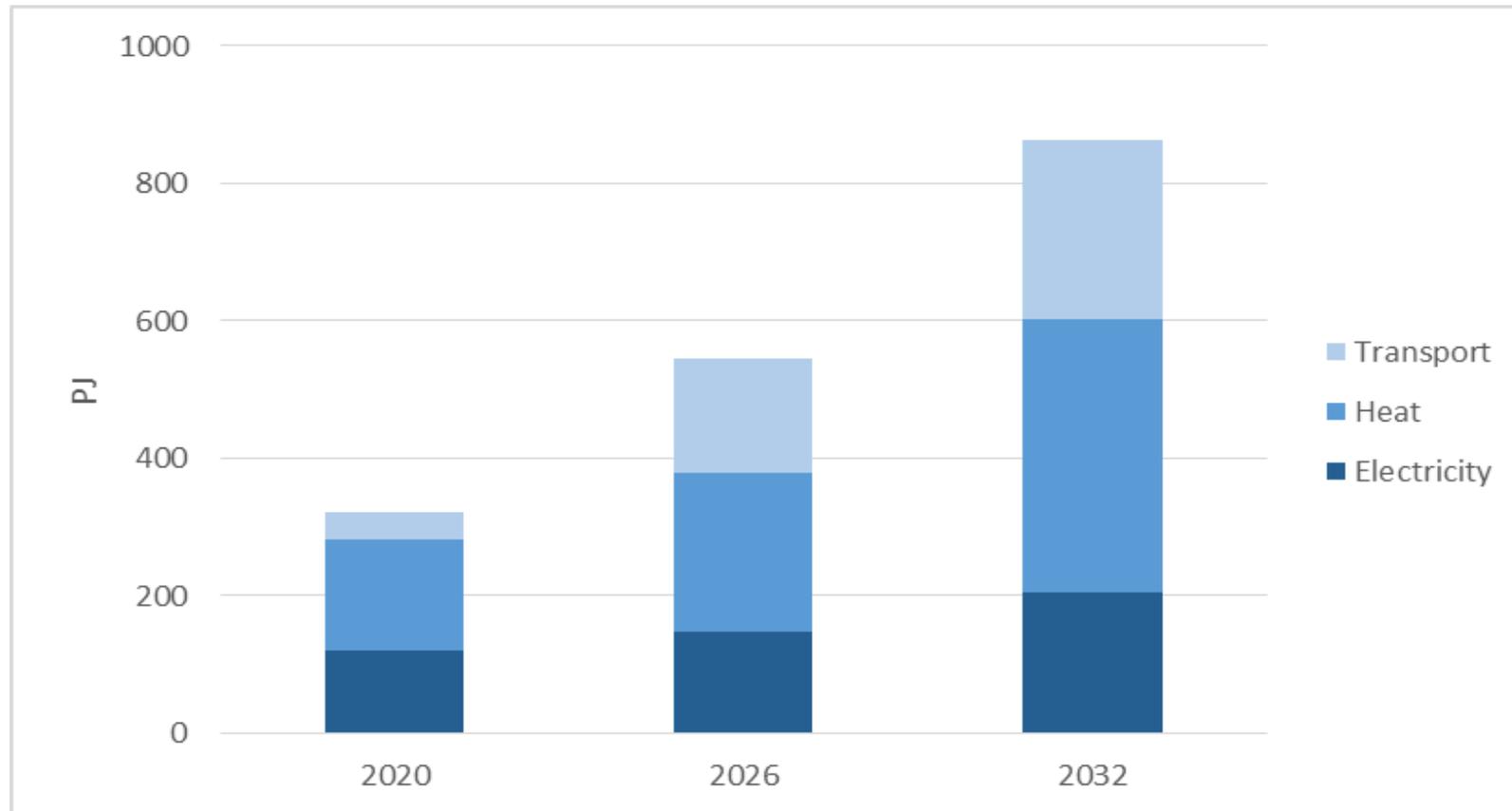
Electricity

- Maintaining current generation
- Waste based CHP
- Large scale biogeneration with CCUS

Bioenergy with CCUS

Bioenergy Growth to 2032

Bioenergy grows to provide around 16% of UK final energy demand



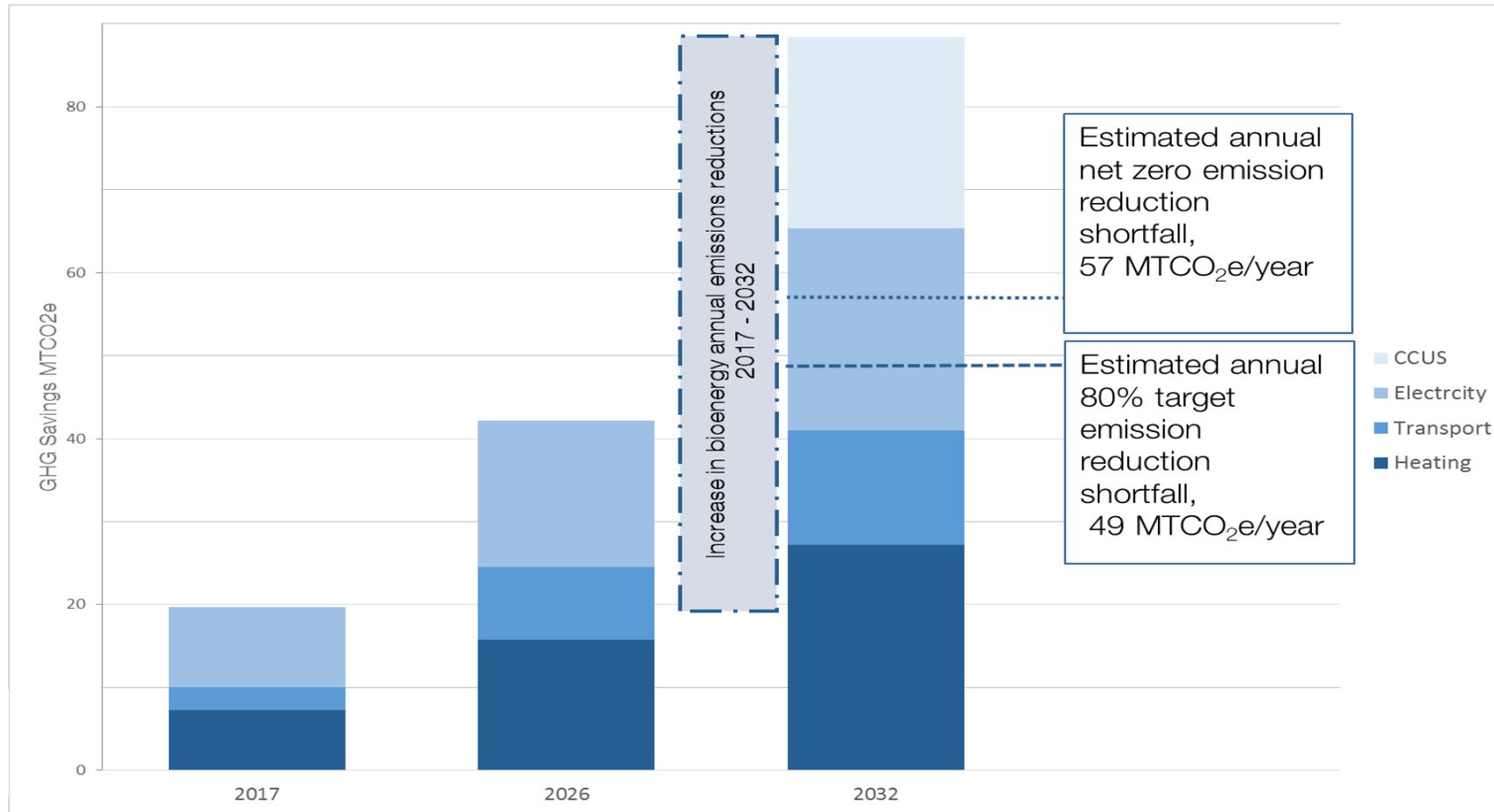
Bioenergy Feedstock

Makes full use of UK potential biomass supply plus increase in imports for large scale applications

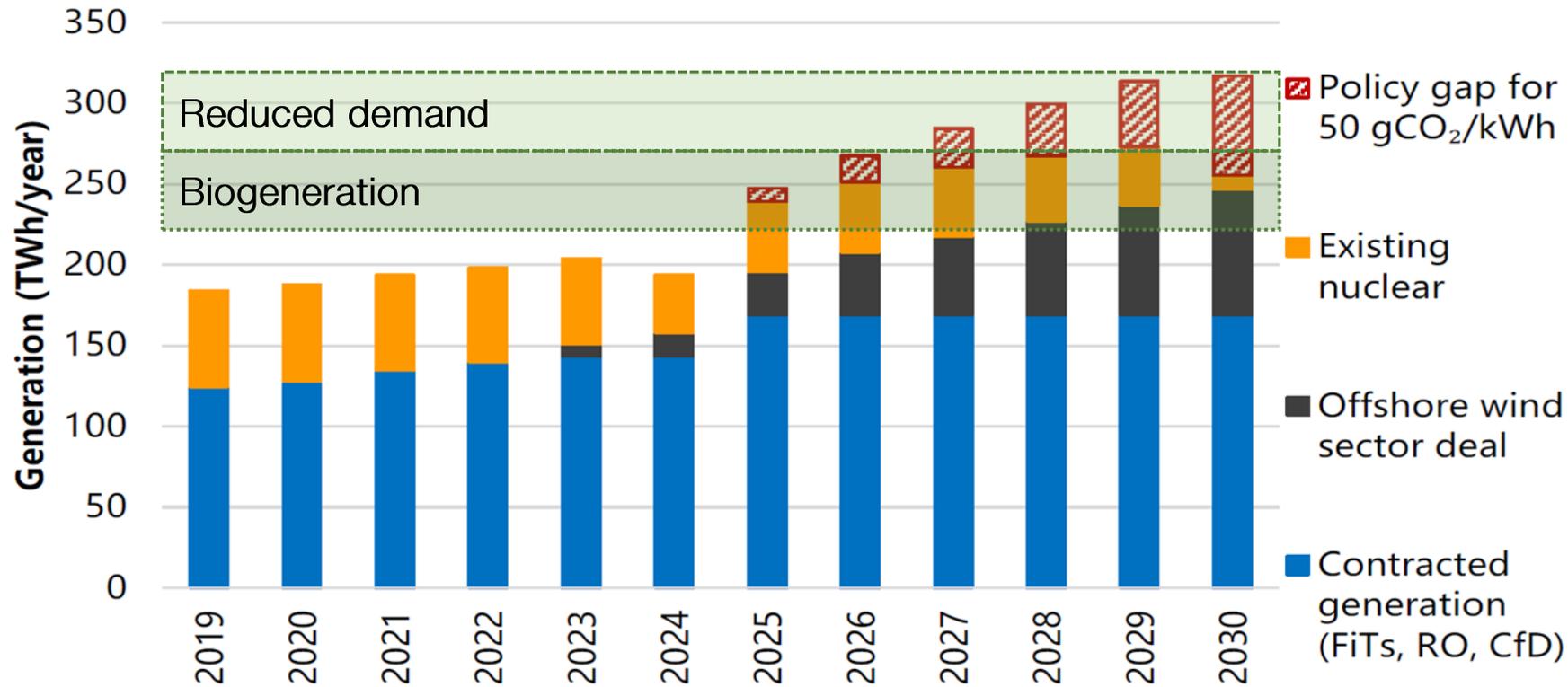
	Heat	Transport	Power
Forestry and wood fuels	***		
Waste fuels			***
Wet wastes	***	***	*
Agricultural wastes	***	***	
Energy crops	***	***	
Imported fuels		***	***

GHG Benefits Over 80 MTCO₂e per year by 2032

Enough to address the current predicted shortfall in emissions reductions required to meet the 5th Carbon Budget and put the UK on track to meet its net-zero carbon ambitions by 2050.



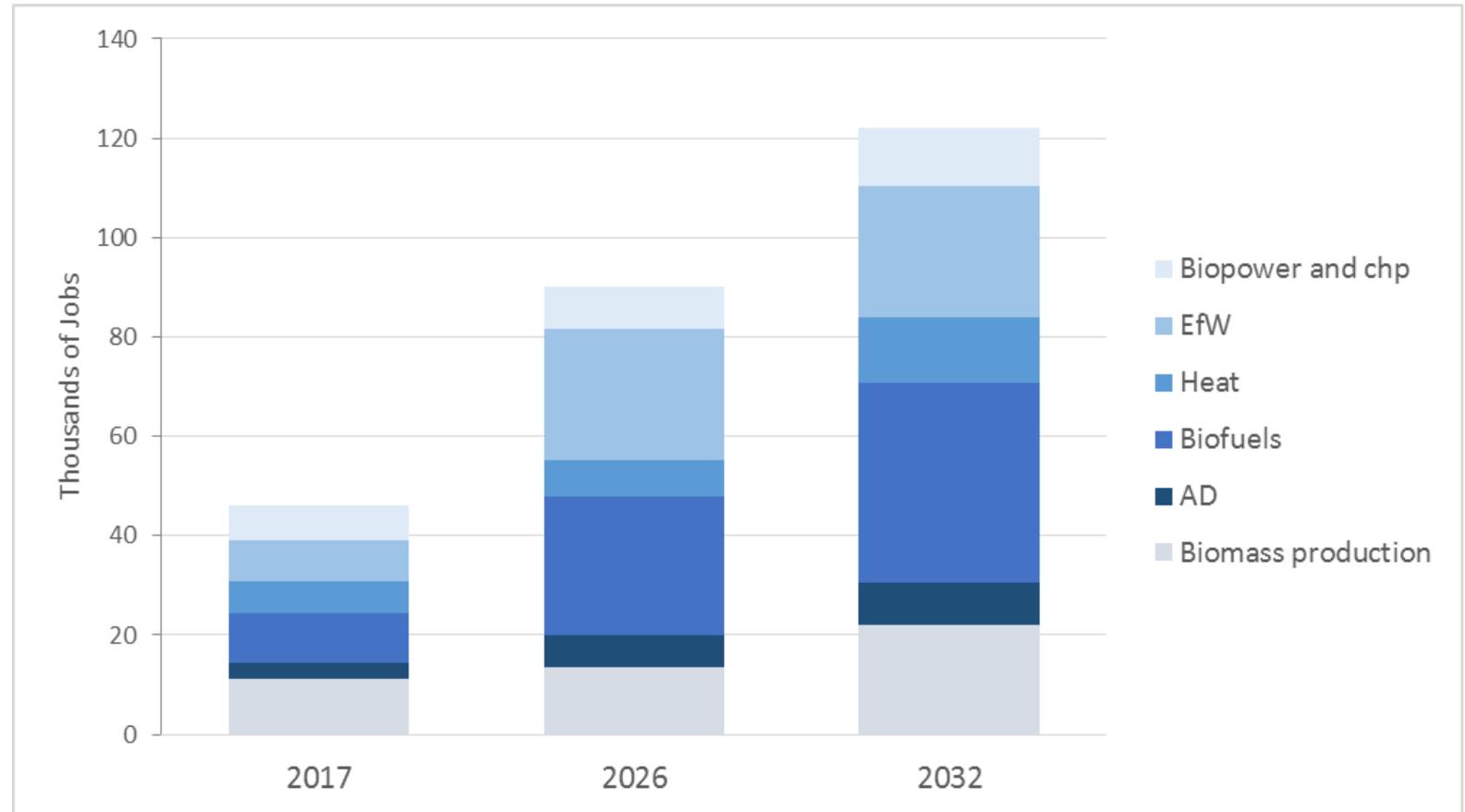
Closing the Potential “Nuclear Gap”



Source: Committee on Climate Change (2019) Reducing Emissions 2019 Progress Report to Parliament

Growing the UK Economy

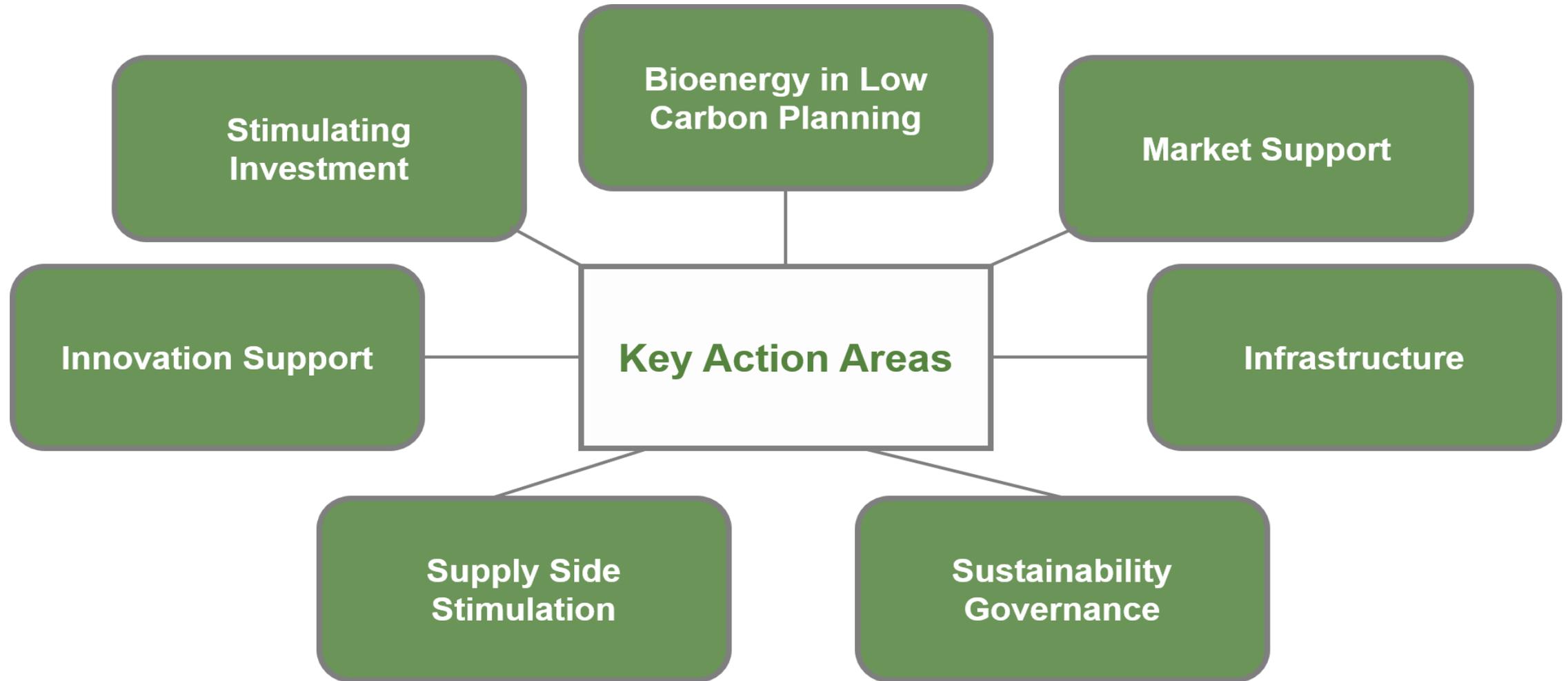
The expanded bioenergy industry sector could become a £20 billion-a-year business, supporting up to 120,000 jobs.



Sustainability Governance

“The production and use of bioenergy must significantly and unequivocally reduce GHG emissions on a whole life-cycle basis compared to fossil sources, while contributing positively to other sustainable development goals and minimising negative environmental, social or economic impacts”

- UK has developed world leading comprehensive sustainability governance framework
- Review to identifies some areas where best practice could be embodied in regulatory framework
- Need to evolve system to incentivise improved performance
- Urgent need for industry and Government to engage with a broader range of stakeholders in order to identify an address remaining concerns, and the REA will convene a Task Force to take this forward.



Key Enabling Measures

Revising Market Enablement Measures for Bioenergy

Prolong and adapt existing support mechanisms

Develop revised and simplified support mechanisms

Constrain high carbon solutions

Introduce stronger carbon pricing signals in all sectors of the energy economy

Revising Market Enablement Measures for Heat

Prolong and adapt existing support mechanisms

- Extend RHI until new support mechanism in place
- Develop and roll out heat quality assurance scheme

Develop revised and simplified support mechanisms

- Evaluate benefits of
- A heat premium feed-in scheme
- A heat obligation on fuels suppliers

Constrain high carbon solutions

- Ban installation of new oil and coal boilers and new natural gas connections in the UK by 2025
- Focus HNIP on low carbon supply.
- Mandate low carbon systems for new buildings.

Introduce stronger carbon pricing signals in all sectors of the energy economy

- Gradual increases in VAT and duties on domestic fuels
- Progressive increase in CCL and link to C content of fuels
- Higher duty levels should on dirtier fuels such as Heavy Fuel Oil

Revising Market Enablement Measures for Transport

Prolong and adapt existing support mechanisms

- Introduce a 10% ethanol blend in gasoline (E10 blend) before the start of 2021
- Revise the RTFO obligation level
- Continue the GHG reporting requirement and set ambitious reduction targets
- Consider obligations for UK based aviation and shipping

Develop revised and simplified support mechanisms

- Extend the life of the GHG reporting scheme, and set progressively increasing GHG reduction targets
- Consider combination of GHG and modified RTFO to best fit UK circumstances.

Constrain high carbon solutions

Introduce stronger carbon pricing signals in all sectors of the energy economy

- Review and adjust fuel duties, and to reflect GHG emissions.
- Expand scope of duty rebate currently available for methane

Revising Market Enablement Measures for Biomethane

Prolong and adapt existing support mechanisms

- Include biomethane in recommended revisions to RHI and RTFO

Develop revised and simplified support mechanisms

- Establish a specific target for the inclusion of biomethane in the gas grid
- Develop the concept of a “green gas obligation” for gas suppliers including option of a GHG reduction Obligation
- Support the development of an active UK Renewable Gas Guarantees of Origin (RGGOs) market.

Constrain high carbon solutions

Introduce stronger carbon pricing signals in all sectors of the energy economy

Revising Market Enablement Measures for Bioelectricity

Prolong and adapt existing support mechanisms

- Reward bioelectricity plants when they provide grid services such as capacity, flexibility, inertia and reactive power once their long-term contracts under RO etc.expire.
- Enable payments for low carbon heat from bioenergy CHP systems

Develop revised and simplified support mechanisms

- Revise CfD scheme or provide a feed-in premium for existing generators, and new waste-based electricity plants
- Introduce new “pot” under CfD for large scale bioelectricity generation with CCUS

Constrain high carbon solutions

Introduce stronger carbon pricing signals in all sectors of the energy economy

- Refocus the CCL to become a carbon emission-based tax, and progressively raise its level

Stronger C Price signals

- Sectoral support measures need to be complemented by progressively stronger carbon price signals across the energy economy
- A carbon price of £70-80/TCO₂e is needed to bridge the cost gap for lower cost bioenergy options but higher prices are needed for some options
- Aim needs to be for a C price of £70 – 80/TCO₂e, and to c. £120 TCO₂e by 2032
- Gradual revision of taxes and duties on fossil energy, including VAT or other duties on domestic fuels, a carbon reflective CCL and transport duties.
- Also need for a value on carbon taken out of system via CCUS

Summary

- Bioenergy has grown rapidly stimulated by enabling policy measures, and already plays a major role in renewables in the UK, but progress is at risk as these measures come to an end.
- Bioenergy can play an essential role in the future low carbon economy, providing 16% of UK energy by 2032, based on established technologies and some new options including BECCS
- This increased bioenergy contribution could lead to GHG savings of over 80 MTCO₂e/year by 2032, enough to bring UK emissions back on track. It would also bridge the “clean electricity” gap.
- A range of policy and other actions are needed to enable this growth of sustainable bioenergy including specific sectoral support measures in heat, transport and the electricity sectors, and supporting the development of BECCUS
- These measures should be complemented by a progressive increase in carbon prices across the energy economy; reaching £70-80/t CO₂ by 2026, and over £120 by 2032.

A Special Thank You to Our Report Supporters

