Green Gas
TASKFORCE

Wales' green gas opportunity

The potential to scale up Renewable Natural Gas

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Introduction

Wales stands at a defining moment in its energy transition. As the need for secure and sustainable energy increases, so the priority for greener gases increases in importance. At Wales & West Utilities we are committed to a cleaner energy future. By working closely with the Green Gas Taskforce and other key partners, we are clear that biomethane offers a practical, proven and scalable solution that we can build on today.

As a homegrown renewable energy source, biomethane has the potential to play a vital role in decarbonising homes, businesses and industry while making full use of the gas infrastructure already in place. Existing biomethane facilities connected to our network in Wales and south west England already use agricultural by-products, food waste and other organic materials to supply enough renewable gas to meet the annual energy needs of more than 160,000 homes. Yet this is only the beginning of what Wales could achieve.

This report shows that there is enough sustainable feedstock for biomethane in Wales to meet about half of our current gas demand by 2050 without negatively impacting on Welsh food production. Indeed biomethane can create new income streams for farmers, support the sustainability of Welsh agriculture and help develop thriving circular economies where resources are reused rather than wasted.

The green gas sector offers a major opportunity for investment, innovation and skilled employment. By 2050, a growing biomethane industry could support around 3,000 high-quality jobs in Wales, with salaries significantly above the Welsh average, while generating an estimated £4 billion in Gross Value Added (GVA). Importantly, the vast majority of biomethane investment can be retained within Wales, delivering lasting benefits for local communities and businesses.

Wales has a proud history as an energy nation. As founding partners of the Green Gas Taskforce, we believe biomethane can help write the next chapter of that story. We invite the agricultural sector and all key partners to join us in driving innovation, strengthening energy security and creating a greener, more prosperous and resilient Wales for generations to come.

Graham Edwards OBE
CEO, Wales & West Utilites

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About WWU

We are the gas emergency and pipeline service, responsible for the safe and reliable transportation of gas to more than 7.5 million people across Wales and south west England, through a network of over 35,000 kilometres of pipelines.

Our team of over 2,000 colleagues work around the clock to keep customers safe and warm, delivering a critical public service 24 hours a day, 365 days a year. We respond to over 90,000 gas emergencies every year, supporting the 2.5 million homes and businesses connected to our network, and investing more than £3 million every week to maintain and upgrade our network. Our commitment is to deliver a resilient and secure energy network that puts the needs of our customers and communities at the heart of our business.

For over two decades, we have built a strong reputation for safety, reliability and excellent customer service. By continually investing in our infrastructure and supporting the transition to a lower-carbon energy system, we remain committed to delivering long-term value for our customers and the communities we serve.

Green Gas TASKFORCE

About Green Gas Taskforce

The Green Gas Taskforce is a campaign group representing the majority of GB's biomethane generators, shippers and traders, all of the GB gas networks and key sector groups. The Taskforce is campaigning to improve the profile of green gas and improve the policy environment in order to unlock the growth needed to deliver at scale.

What is Biomethane?

Biomethane, also known as Green Gas and Renewable Natural Gas, is a reliable, renewable and ready-now fuel. It is a low-carbon version of methane, hence being called renewable natural gas in some countries. Biomethane is produced in an oxygen-free environment in domes called anaerobic digesters. Organic matter, such as agricultural waste and residues, is known in the industry as feedstock is broken down in these domes and biomethane is produced, which is then injected into the gas network. Across GB, there are around 130 biomethane plants injecting low carbon biomethane into the grid. Two of these are in Wales, delivering clean energy to 9,000 homes with five more plants in the pipeline.

The Importance of the Welsh Gas Grid

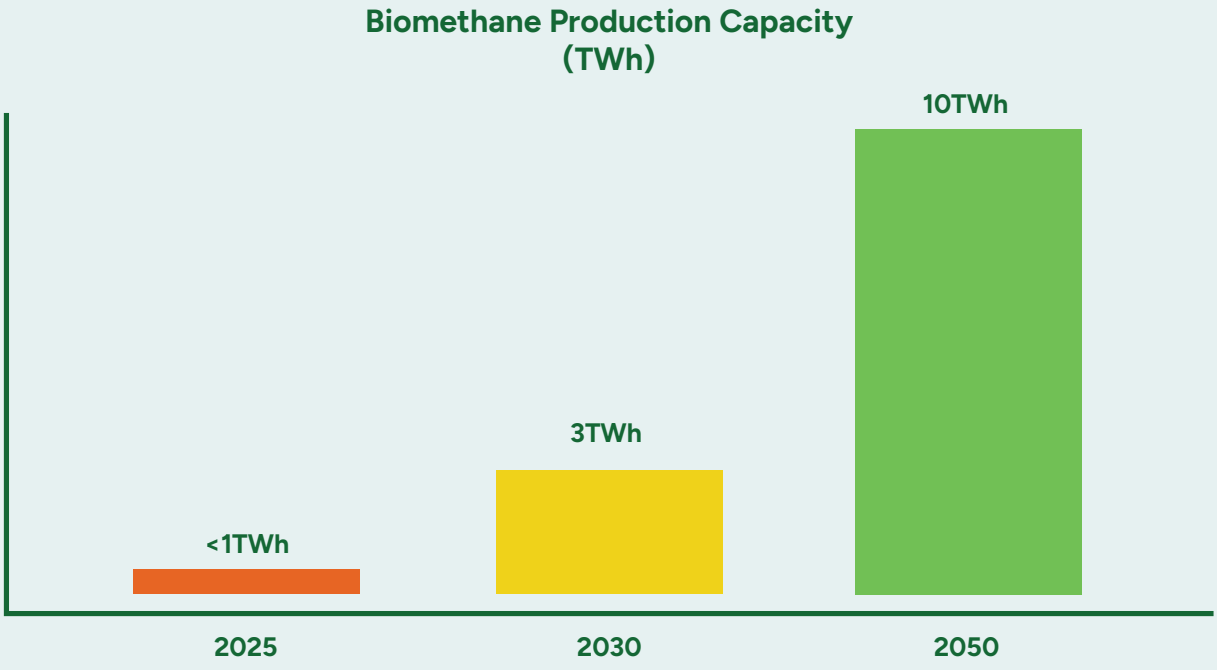
Wales' gas network is essential for biomethane to scale further. Wales uses around 50% more gas than electricity overall, and Wales' network delivers gas to over 1.1 million homes and more than 31,000 businesses at a reliability rate of 99.99%. The gas network is the necessary prerequisite to deliver biomethane at scale to a broad range of end users at least cost. Over the last four years, the number of users connected to Wales' gas network has increased.

Biomethane is a 'drop-in' fuel - both industrial customers and domestic households supplied with it do not need to change equipment like boilers and other appliances to use it, meaning biomethane offers energy users a seamless transition to cleaner energy.

Wales' biomethane potential

Independent analysis commissioned by the Green Gas Taskforce concluded that there is sufficient sustainable feedstock in Wales to generate 3 TWh of biomethane by 2030 and 10 TWh of biomethane by 2050, **equivalent to around almost half of Wales' 2025 economy wide gas demand**.

Importantly, the feedstocks used for this would not negatively impact Welsh food production and would increase Wales' energy security, while decarbonising its gas use.



Welsh Green Gas Jobs and Economic Benefit

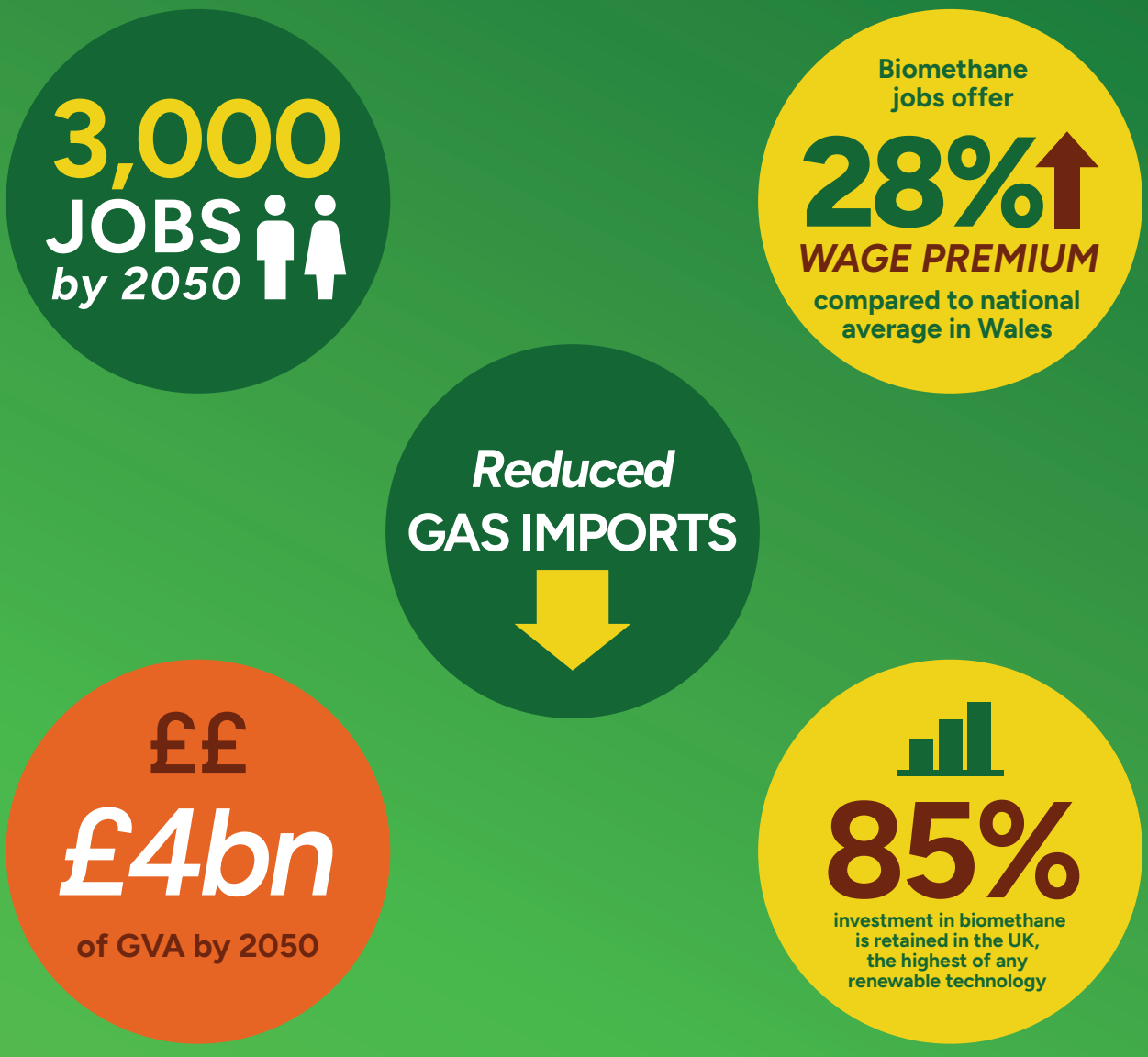
The Taskforce commissioned a study to assess the potential Gross Value Added (GVA) and employment opportunities from a green gas sector that delivers on its potential. The results show that in Wales the sector could deliver:

- 3,000 jobs by 2050, with wages 28% above the Welsh average, providing a wage premium in the sector. These jobs would be outside the big cities, distributing wealth towards Wales' rural communities.
- £4 billion of GVA by 2050

Workers required to deliver a larger green gas sector include engineers, construction workers and welders.

The analysis also showed that for every £1 invested in biomethane, 85p stays in Britain, reflecting the highest domestic content share of any low carbon or renewable technology.

In addition to this growth in green gas jobs, the continued use of the gas network in Welsh helps secure the future of the thousands of skilled engineers and workers who live in communities across the country.



The Importance of the Farming Sector to Deliver Biomethane

The Welsh farming sector will be critical to deliver a turbocharged green gas sector, as the majority of future feedstock comes from farms. Today, only 2.5% of organic farm waste in the UK is used to make biomethane, making it a huge, untapped resource of green fuel.

The valorisation of farm waste and other feedstock sources will ensure a stable revenue to farmers over a 15-to-20-year time period, providing predictability and income at a time of great pressure and uncertainty in the agricultural sector.

Anaerobic digestion not only produces gas but also an additional byproduct known as digestate. Digestate is the remaining organic product left over after all of the methane has been released and captured. Given its nitrogen-rich content, it can be used as a green alternative to synthetic fertiliser, all of which currently has to be imported into GB today. Digestate is also known as Bio-fertiliser and its value as a green product reduces the cost of biomethane for consumers, improves the sustainability of the agricultural sector, and creates further economic opportunities for farmers.

Decarbonising Homes

As noted earlier in this report, there is sufficient sustainable feedstock in Wales to generate 10 TWh of biomethane by 2050.

Economy wide gas demand in Wales in 2023 was 21.4 TWh, with 12.5 TWh of this demand coming from the domestic heating sector.

There is sufficient sustainable biomethane feedstock in Wales to heat and decarbonise annual demand equivalent to 80% of Welsh homes – and that is before any measures are taken to reduce household gas consumption, such as improved energy efficiency. Biomethane can be used in existing homes and boilers with no change needed to existing equipment, making it a seamless decarbonisation transition.

There is also the potential for biomethane to be used as part of a bio-hybrid heating system, where a home retains the use of its (normally existing) biomethane-fuelled gas boiler and pairs it with a small heat pump. The heat pump, which is used for home heating during milder seasons, reduces household gas demand by at least 70% over a year, while the boiler is used during colder periods and for hot water.

A bio-hybrid system offers the same emissions reductions as a standalone heat pump, while also offering a lower cost solution for households with lower energy efficiency standards. The deployment of a Bio-Hybrid removes the need for costly upfront energy efficiency upgrades, which can cost between £8,640 and £17,280 depending on the size and condition of the property, the equivalent of four to eight years of typical household savings. According to Welsh Government statistics, 45% of Welsh homes have an EPC rating of D or below.

Decarbonising Industry, Transport and Power

Biomethane can also be used interchangeably with natural gas in other sectors and energy uses. Industrial clusters such as in North East Wales anticipate ongoing natural gas use in the 2040s and beyond, even where hydrogen, CCUS and electricity connections are available.

Biomethane can be used to decarbonise industrial processes which are reliant on gas for high grade heat, such as food production and manufacturing. While some of these are in industrial cluster areas, the majority are distributed around the country. As with boilers, no change is needed to existing equipment at industrial sites, making its use a cost-effective and disruption-free transition to green energy. Biomethane is often a more cost-effective means of decarbonising industrial processes reliant on gas compared to an electrification alternative.

Over 30,000 Welsh businesses depend on gas for their energy needs, and many are unable to electrify without overcoming huge cost or technical barriers. Hospitals, emergency services and food supply chains require uninterrupted energy, and evidence shows that poorly managed transitions will lead to further offshoring of industry, often to locations with higher carbon emissions than Wales.

Biomethane is being used today to fuel and decarbonise the Heavy Goods Vehicle (HGV) sector, with around 3,250 biomethane trucks on UK roads today. Analysis commissioned by the Taskforce showed that the total cost of ownership of a 6 by 2 44 tonne biomethane HGV is less than a diesel equivalent today, whilst delivering comparable performance, load capability and sufficient refuelling capacity due to the use of the gas network.

Similarly, as Wales continues to develop its wind and solar capacity, there will always be a need for dispatchable fuels to supply and balance the electricity grid during still, dark evenings. Biomethane can be used in gas-fired power stations to deliver low-carbon electricity during these periods.

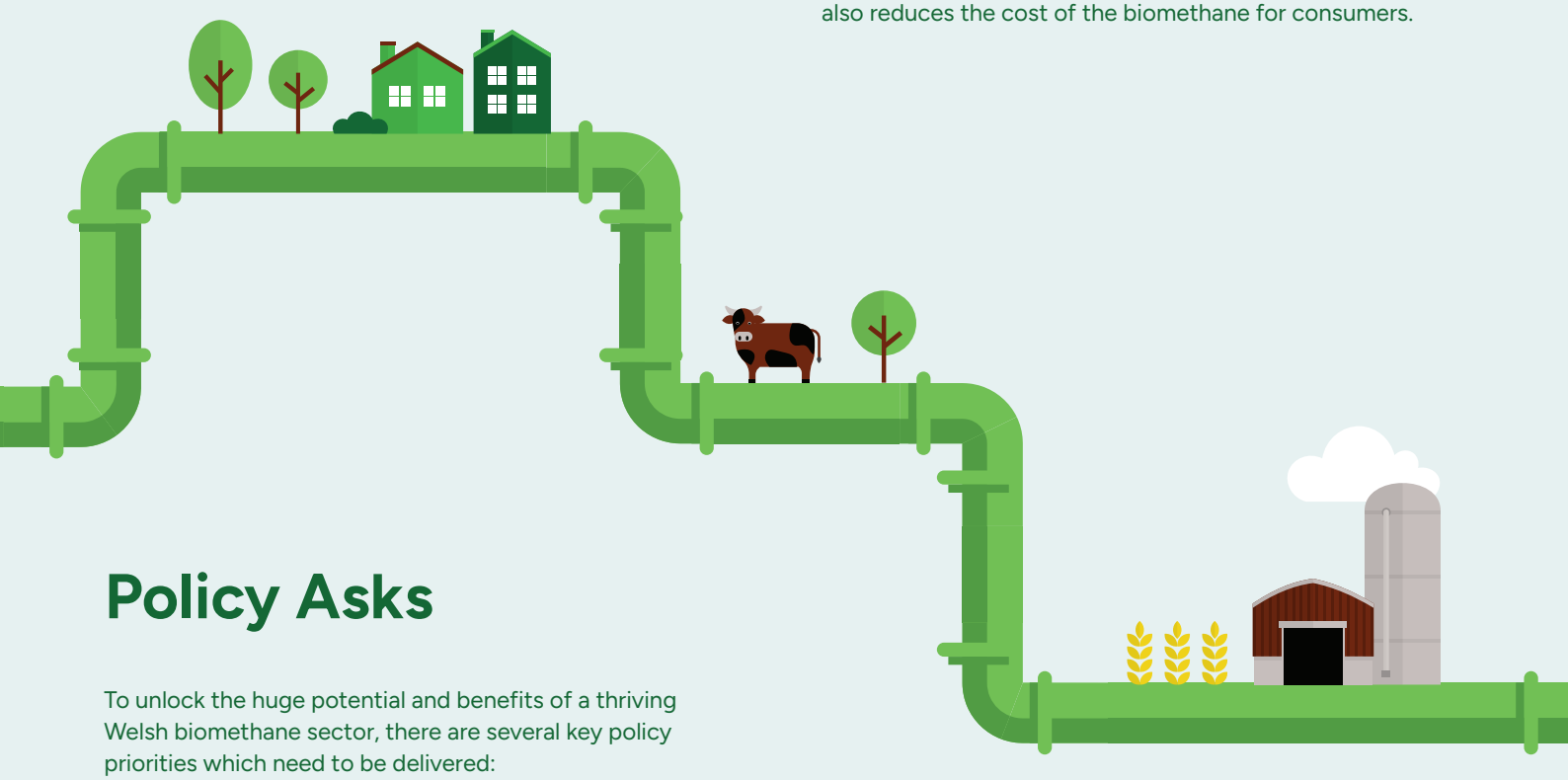
Reducing the Cost of Net Zero

Wales has set ambitious decarbonisation targets, with a goal of achieving a net zero economy by 2050. It is imperative that the Welsh Government deliver an energy transition that is affordable and achievable. Analysis commissioned by the Green Gas Taskforce concluded that maximising the biomethane opportunity across the UK would cut the cost of net zero by £174 billion, the equivalent of £250 per household, per year.

Delivering Greenhouse Gas Removals

As well as producing digestate as a byproduct of anaerobic digestion, the production of biomethane also creates a pure stream of bio-CO2. This bio-CO2 can today be used in the food and drink sector. However, if combined with Carbon Capture and Storage (CCS), bio-CO2 can deliver a Greenhouse Gas Removal (GGR) solution at much lower cost than other CCS technologies.

Biomethane derived bio-CO2 is the most cost-effective means of putting the 'net' in 'net zero', and delivering emissions reductions at lower cost compared to other decarbonisation pathways. The valorisation of this bio-CO2 also reduces the cost of the biomethane for consumers.



Policy Asks

To unlock the huge potential and benefits of a thriving Welsh biomethane sector, there are several key policy priorities which need to be delivered:

1. Welsh and UK Governments should set a **national target** for biomethane.
2. Following the extension of the Green Gas Support Scheme, to ensure consistent delivery of new biomethane plants through to 2030, **an ambitious post 2030 future framework is needed** from UK Government.
3. UK Government should direct resource to rapidly secure **biomethane's zero-rating on the UK Emissions Trading Scheme**.
4. Create a **functional market for Greenhouse Gas Removals** from biogas upgrading and biomethane combustion, and **valorise digestate** as a like-for-like replacement for fertiliser imports.
5. Recognition from UK and Welsh Governments and other important stakeholders of the **strategic importance of our gas infrastructure** as an enabler of decarbonisation, economic growth and energy security.

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