CO_2 Removal & Gases: Biomethane Gas Grid Share

This lever controls the sub-levers listed in the table, and ambition levels are for the end year shown on the right-hand side.

Biomethane is made up of methane produced from biological sources and is very similar to natural gas (which is mostly methane) and hence can be directly substituted for natural gas in existing gas grid infrastructure. Increasing the share of biomethane in the gas grid is therefore a way to reduce emissions as it requires no new network infrastructure and causes no disruption to the end user[1].

The achievable share of biomethane in the gas grid is driven primarily by availability and sustainability of biomethane supply. Currently biomethane makes up approximately 0.2% of the gas grid supply and comes predominantly from the anaerobic digestion of waste material. Similarly sustainable supplies are expected to enable an increase to around 4% (about 20TWh of a 500TWh distribution gas grid based on 2015 demand) however at present any further increase raises concerns over:

- Sustainability and security of supply of UK/imported biomass;
- Diversion of biomass from areas that are more difficult to decarbonise (e.g. biofuel for aviation)

Key Interaction

Biomethane is supplied by anaerobic digestion (AD) of waste and gasification of biomass. Biofuels can be created from waste and biomass grown in the UK, but these have limited availability. Any demand not met by UK biomass is satisfied by imports. However, dependency on large quantities of imported biomass may not be possible in reality and would result in a less robust energy system. UK bioenergy production can be controlled through the Land Use & Biofuels levers. Biomethane is below Hydrogen in the priority order, should ambition for gas grid share exceed 100%.

Level 1

Biomethane injection remains around current levels.

Level 2

Efforts continue to increase the biomethane share in the gas grid to 5%, predominantly from AD of waste.

Level 3

The biomethane share of the gas grid rises to 25%, using AD of waste and gasification of UK biomass.

Level 4

Huge advances in methods of sustainably and securely generating biomethane lead to full injection of biomethane to the gas grid. Unless gas demand is reduced, this would require over twice the maximum available raw biomass of around 300 TWh/year (CCC 'Global governance and innovation' scenario[3]).

[1] https://www.theccc.org.uk/wp-content/uploads/2016/10/Next-steps-for-UK-heat-policy-Committee-on-Climate-Change-October-2016.pdf

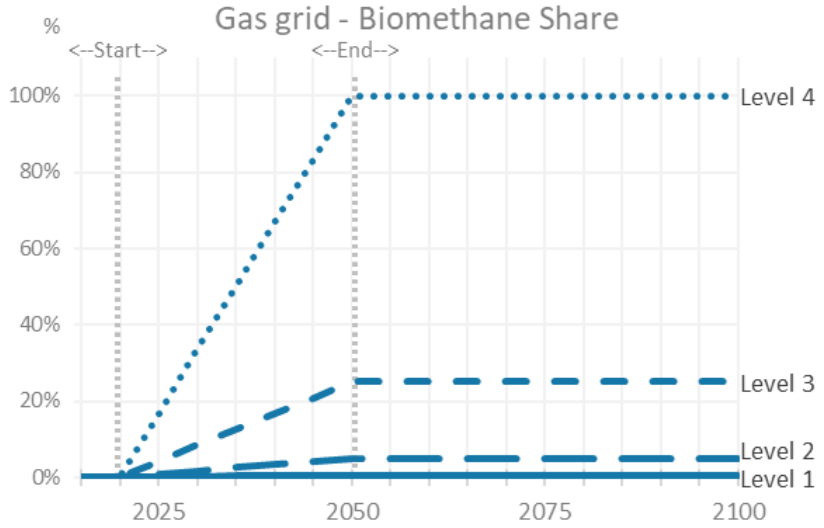
[2] https://www.policyconnect.org.uk/sites/site_pc/files/report/1001/fieldreportdownload/futuregaspt1nextstepsforthegasgridwebcompressed.pdf

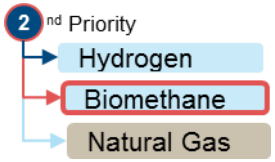
[3] https://www.theccc.org.uk/publication/biomass-in-a-low-carbon-economy/

Default Timing

Start year: 2020, End year: 2050

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Biomethane Gas Grid Share	share	0.2%	0.5%	5%	25%	100%





Lever Priority

Biomethane is second in the priority order for decarbonising the gas grid.

Where supply would otherwise exceed demand, measures lower in the priority order will be superseded by those above them. Natural gas will meet any shortfall in demand.