Buildings: Network Heat – Biomass CHP

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

Heat networks, sometimes called district heating (especially when referring to larger networks), deliver heat from a centralised source. Combined heat and power (CHP) systems utilise the heat produced by generating electricity in a thermal process such as burning fossil fuels in a generator. The majority of CHP systems in the UK use gas, but biomass represents a low-carbon alternative.

CHP systems provided 75% of the heat used in district heating systems in 2015. Of these CHP systems 90% were gas-fuelled, delivering 10.4TWh of heat.

The use of biomass in CHP systems has the potential to reduce carbon dioxide emissions because most of the CO_2 emitted from the combustion of biomass has been previously absorbed by the crop.

Key Interaction

Network Heat using Biomass CHP will only be built if there is sufficient demand for district heat (District Heat Share lever).

Biomass supply must also be considered. 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.

Level 1

There is no ambition to use biomass CHP for district heating.

Level 2

The contribution of biomass CHP to district heating increases to 25 TWh/year.

Level 3

The contribution of biomass CHP to district heating increases to 50 TWh/year.

Level 4

100 TWh/year of heat is delivered by biomass CHP to district heating, requiring nearly all of the maximum available raw biomass of around 300 TWh/year (CCC 'Global governance and innovation' scenario[1]).

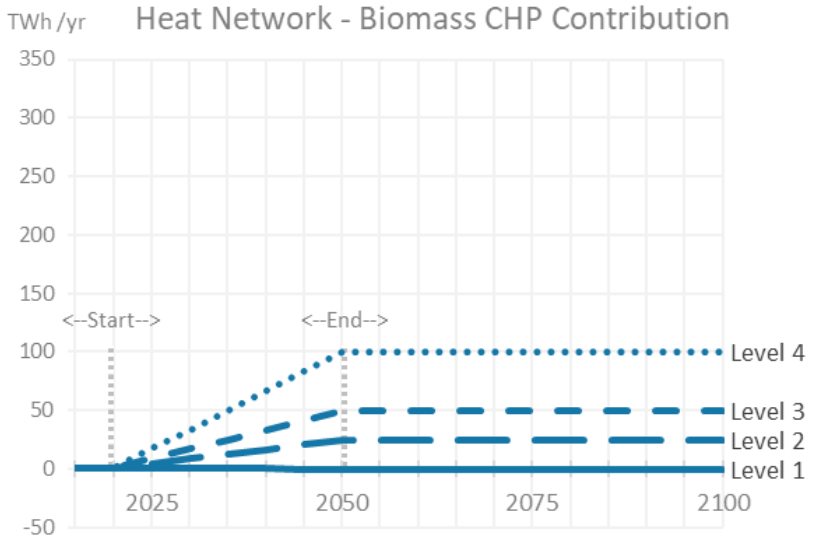
[1] https://www.theccc.org.uk/publication/biomass-in-a-low-carbon-economy/

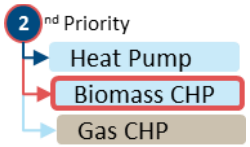
Default Timing

Start year: 2020, End year: 2050

Biomass CHP share of network heat

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Biomass CHP	TWh/yr	0	0	25	50	100





Lever Priority

Biomass CHP is second in the priority order for supplying heat to heat networks.

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