

Cogeneration Country Fact Sheet

THE UNITED KINGDOM



JUNE 2014

1. Policy environment

1.1 Complex policy environment

TYPE OF CHP	Operational support	Tax relief from...				Capacity market			
		Feed-in tariff	Renewable Obligation Contracts (ROCs) ↓ Contracts for Difference (CfDs)	...Climate Change Levy (CCL)			...Carbon Price Support (CPS)		
				Fuel input	Electricity output		Fuel input for generated electricity		
					Directly supplied		Exported	Directly supplied	Exported
(heat production is exempt from both CCL & CPS)									
Fossil CHP	> 2 MWe			✓	✓		✓		
	≤ 2 MWe						✓		
	< 2 kWe	✓				✓			
RES CHP	Electricity		✓						
	Heat					✓			

- UK Government plans to develop bespoke CHP legislation, with negotiations currently ongoing.
- New connections to DHC schemes are eligible under the Energy Companies Obligation (ECO).
- DHC may soon qualify as a primary measure within the Carbon Emission Reduction Obligation (CERO).
 - Micro-CHP benefits from a simplified grid connection procedure called "fit & inform".
 - CHP is promoted at local level through planning requirements.

CHP fits into the Government's strategy to support energy efficiency and low-carbon heat production, while maintaining a strong industrial base. However, the CHP sector operates in a complex policy environment. The UK Government's recent decision in the Budget 2014 to exempt onsite CHP electricity production from the Carbon Price Floor is considered an important step forward, helping the stability of the existing CHP fleet and acting as an incentive to build new capacity. In addition, the new Contracts for Difference Feed-in Tariff will only support biomass when used in highly-efficient CHP mode. New CHP plants are also eligible to bid in the first Capacity Market auction in December 2014 for delivery in 2018/2019. Moreover, to ensure CHP's benefits are appropriately supported, the Department for Energy and Climate (DECC) has recently committed to developing a bespoke CHP policy.

1.2 Energy and climate targets: Objectives set on the pathway to 2050

The UK is one of the first countries to set itself a binding 80% CO₂ reduction target for 2050. The UK has set itself four interim Carbon Budgets, covering the period between 2008-2027, in which it has committed to a 34% GHG reduction by 2022 and to halving GHG emissions by 2027 compared to 1990 levels. In the context of the EU 2020 climate and energy package, the UK has to reduce non-ETS CO₂ emissions by 16% and increase its share of renewables by 15%, and it has recently committed to an 18% reduction in energy consumption by 2020 as its indicative energy savings target under the Energy Efficiency Directive (2012/27/EU). The UK was one of the countries that failed to achieve its interim 2011 RES target.

1.3 Support levels for CHP

The Department for Energy and Climate Change in the UK Government (DECC) administers the CHP Quality Assurance Programme, which qualifies CHP plants for most of the available support.

The full or partial exemption from the Carbon Price Support and the Climate Change Levy for fossil-fuel CHPs, depending on size and the amount of electricity consumed onsite vs. exported, play an important role in the decision to install a new CHP.

The support schemes applicable to renewable CHP (ROCs, FiTs with CfD and non-domestic RHI) are generally considered generous. However, in reality the current design of these support mechanisms does not offer investors in renewable CHP sufficient certainty.

Micro-CHP is the only fossil-fuel based technology that is eligible under the FIT, benefitting from favourable rates on both self-consumed and exported electricity.

IN THE SPOTLIGHT: Small-scale CHP market

The CHP segment below 2 MWe has seen sustained growth in the UK, a trend which is expected to persist, as self-generation and onsite consumption are becoming attractive options for industry. Total installed capacity of units below 1 MWe has grown by approx. 50% between 2008 and 2012, reaching around 300 MWe in 2012.

The main driver for this development is linked to market dynamics where retail electricity prices are continuing to stay high relative to the price of fuels used in CHP plants, particularly gas (~11 p/kWh of electricity vs. ~3.5 p/kWh of natural gas in April 2014). Industry is thus motivated to install CHP units for onsite consumption in order to mitigate the effects of increasing electricity costs.

Small-scale CHP benefits from Climate Change Levy and Carbon Price Support tax relief, which recognises the contribution of Good Quality CHP to achieving the UK's energy efficiency and climate goals.



Sources

Figures 1, 2, 3, 4: DECC/ DUKES 2013

Figure 5: DECC, 2013

Additional Sources

UK Government's Heat Strategy, 2013

DECC, CHP Focus

DECC, Impact of CPF on GQCHP, 2013

HM Revenue & Customs, CCL and CPS rates, 2014

Acknowledgements

COGEN Europe thanks the UK CHPA for their valuable contribution to this Fact Sheet.

Disclaimer

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2. CHP Sector Key Figures

2.1 CHP electricity and heat production

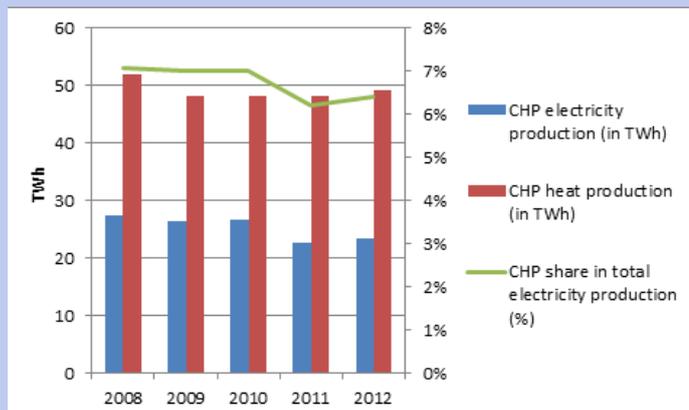


Figure 1: CHP electricity and heat production (2008-2012)

CHP plants generated 23.3 TWh of electricity in 2012, representing 6.4% of the total power generated in the UK. Average load factors in Good Quality CHP mode decreased from 59% to 43% between 2008-2012, a downward trend which was most noticeable in the chemical sector.

2.2 CHP fuel mix

Natural gas represents nearly 70% of the fuel used in CHP installations. Renewable CHP is seen as a growing market, as the renewables share increased from 3.8% to 8% between 2008-2012, with liquid biofuels contributing to this growth in recent years.

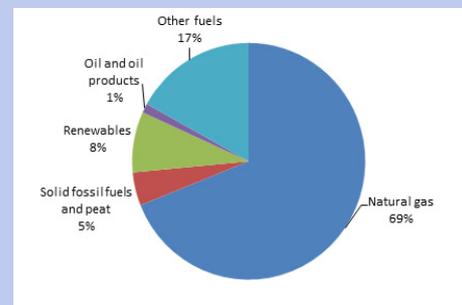


Figure 2: CHP fuel mix in 2012

2.3 Installed capacity by CHP size range

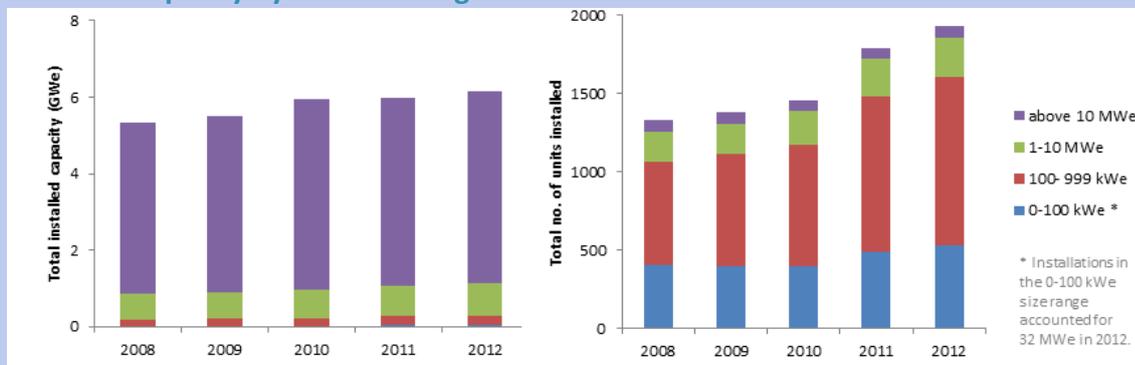


Figure 3: Total CHP installed capacity and number of installations by size range (2008-2012)

Cogenerated electricity comes mostly from large power plants above 10 MWe. However, the market for CHP units below 1 MWe is more dynamic, having increased by 50% over the past 5 years. As the UK is one of the largest boiler markets in the EU, there is significant potential for residential micro-CHP sales to take off in the coming years. There are currently 473 micro-CHP units under 2 kWe registered under the Feed-in Tariff scheme, most of which are Stirling engines. In addition, ICE based micro-CHP sales are also in the low hundreds, with the 5.5 kWe Senertec Dachs model accounting for most of installed units.

2.4 Installed capacity by sector

Most of the CHP capacity installed in the UK (over 90%) is on industrial sites. More than three quarters of the industrial CHPs are installed in the refining and chemical sectors. Commercial and residential CHPs installed in buildings account for 433 MWe, most of which are installed in sectors like leisure, hotels, health and education.

DHC is not widespread in the UK, with just 2% of consumers being served by a district heating network. In 2013 there were a total of 1765 individual District Heating Networks, 95% of which were medium and small (supplying fewer than 190 dwellings per network). The majority of DHC schemes were built before 1990 and only 30 DHC networks have been built since 2000.

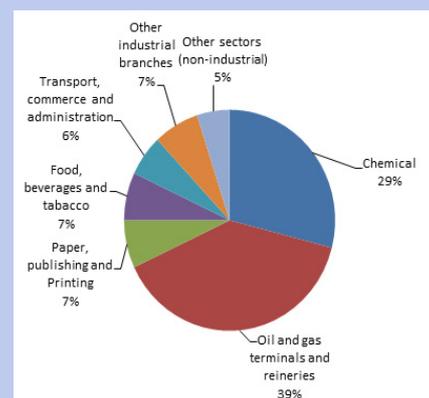
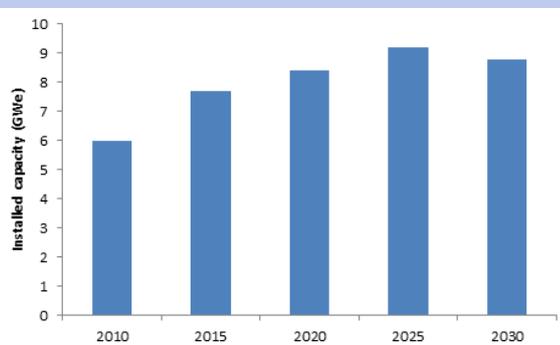


Figure 4: CHP installed capacity by sector (2012)

3. Outlook



Based on current policy developments and as spark spreads recover in the UK, slow future growth is expected in the production of electricity and heat from CHP in the coming decades. While good prospects are foreseen for small scale CHP below 2 MWe, growth in the larger, exporting industrial CHP market is yet to pick up pace. The latest UK Government projections indicate that installed electrical capacity of CHP will increase by up to 50% between 2010 and 2030.

Figure 5: CHP capacity projections 2010-2030