



EUROPEAN COMMISSION  
DIRECTORATE-GENERAL FOR ENERGY

Director General

## TEMPLATE

### CONCERNING THE REPORT IN ACCORDANCE WITH ARTICLES 6(3) AND 10(2) OF DIRECTIVE 2004/8/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON THE PROMOTION OF COGENERATION BASED ON A USEFUL HEAT DEMAND IN THE INTERNAL ENERGY MARKET AND AMENDING DIRECTIVE 92/42/EC.

#### 1. Transposition/implementation of the legal text of Directive 2004/8/EC

Q1 What is the level of transposition of the Directive in your country? What is the timeline for the remaining parts of the transposition of the Directive, if any?

**The UK has fully transposed the Directive.**

Q2 What is the timeline for implementing measures based on the Commission Decision of 19.11.2008 establishing detailed guidelines? Please indicate how this has taken place (revision of a general energy law, a specific law, decree, regulation,...).

**This has taken place by amending the Combined Heat and Power Quality Assurance Programme (CHPQA) Standard. In terms of calculating primary energy savings from CHP for the purposes of determining eligibility for public support the UK uses CHPQA, an existing programme to do this. The CHPQA formulas for Good Quality CHP have been amended to incorporate the harmonised efficiency reference values, so that it complies with the calculation of energy savings using the alternative calculation provided for under Article 12(2) of the Directive. This work has been completed and has been applicable to new CHP from January 2007 and to all CHP from January 2011, when determining eligibility for public support.**

Q3 To what extent do you consider your country to have already significantly implemented the Directive?

**The UK has fully implemented the Directive.**

Q4 Is your country using the alternative calculation method according to Article 12(2)?

**Yes.**

**In terms of calculating primary energy savings from Combined Heat and Power (CHP) for the purposes of determining eligibility for public support the UK has an existing programme that does this, called the Combined Heat and Power Quality Assurance Programme (CHPQA). It provides a robust assessment of the environmental benefits of CHP and ensures that any public support is directed to CHP that achieves significant primary energy savings.**

**The UK has complied with Article 12(2) option, using CHPQA as the ‘alternative methodology’, amended to fulfil the criteria in Annex III(a) by incorporating the harmonised efficiency reference values for separate production of electricity and heat for new Schemes from January 2007 and for existing Schemes the UK continued with the current arrangements until the end of 2010. This was communicated with the Commission by a letter to Mr Alfonso Gonzalez Finat on 21 November 2006.**

Q5 Is there any need for your country to review in accordance with Article 13 the threshold values used for calculation of electricity from cogeneration and/or the threshold values used for calculation of efficiency of cogeneration production and primary energy savings?

**No, the Combined Heat and Power Quality Assurance Programme (CHPQA) Standard has already been amended. In terms of calculating primary energy savings from CHP for the purposes of determining eligibility for public support the UK uses CHPQA, an existing programme to do this. The CHPQA formulae for Good Quality CHP have been amended to incorporate the harmonised efficiency reference values, so that it complies with the calculation of energy savings using the alternative calculation provided for under Article 12(2) of the Directive. This work has been completed and applies to all applications for CHP when determining eligibility for public support.**

## 2. National potential to increase the share of high-efficiency cogeneration

Q6 Can your country already show progress in high-efficiency cogeneration since the last report on national potential which can be ascribed to either EU or national legislation and support schemes?

Table 1 below shows the evolution of installed CHP capacity, input fuel and cogenerated electricity and heat production in the UK since 2005 with CHP electrical capacity showing an increase of 12% over the 2005-2010 period as a result of national policies and support schemes. This latter increase is also illustrated in Figure 1.

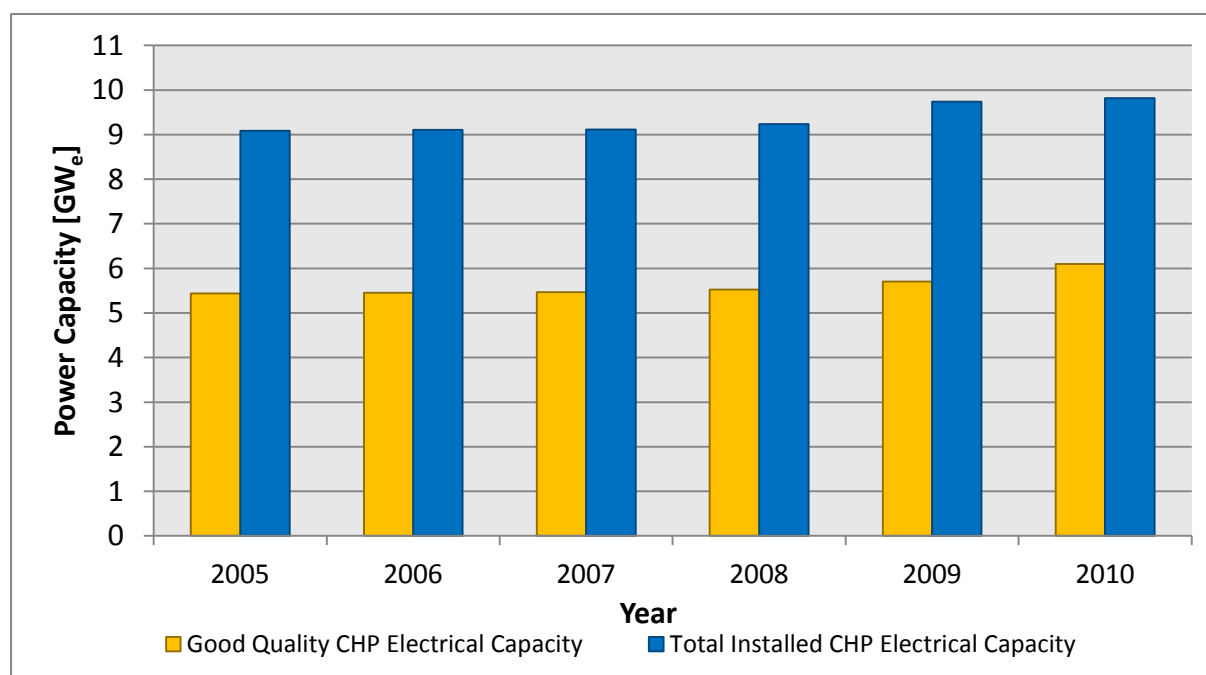
Table 1:- UK CHP capacity and output statistics 2005-2010 (see notes)

Year	Total No Of Schemes	Gross Capacity (MWe) <sup>1</sup>	CHP Capacity (MWe) <sup>2</sup>	Fuel Input (GWh) <sup>3</sup>	CHP Electricity Production (GWh) <sup>4</sup>	CHP Heat Production (GWh) <sup>5</sup>
2005	1,502	9,088	5,440	95,375	27,235	51,454
2006	1,544	9,108	5,451	95,234	25,209	46,003
2007	1,438	9,116	5,466	88,482	25,343	45,271
2008	1,481	9,235	5,527	86,067	25,001	44,887
2009	1,545	9,737	5,706	84,066	24,511	43,301
2010	1,598	9,816	6,102	83,849	23,644	43,201

Notes:

- 1) Total Power Capacity of CHP schemes
- 2) Qualifying Power Capacity
- 3) Fuel input to generate CHP Power (gross power generated-condensing power) and CHP heat.
- 4) Power generated with an overall annual efficiency (NCV)  $\geq 75\%$  (gas turbines, internal combustion)
- 5) Total useful heat from CHP. This excludes any heat generated in boilers or heat extracted from a steam generator before entering the steam turbine.

Figure 1:- Installed UK CHP capacity, 2001 to 2010



Q7 What is your evaluation of the progress towards increasing the share of high-efficiency cogeneration in your country? Your assessment should be based on the specific figures to be included in the attached spreadsheet (Excel file) designed to facilitate the submission of your data.

**Table 2 below summarises how the levels of CHP and total UK generation have changed between 2005 and 2010, the share represented by CHP and the primary energy and carbon savings from CHP.**

**CHP output has fallen between 2005 and 2010 as has the total UK power generation over the same period (the share of CHP in total electricity generation has remained approximately constant). Whilst the CHP primary energy and carbon savings have fallen reflecting the drop in CHP output, the CHP Primary Energy Savings as a percentage of the total base case Primary Energy input have changed little.**

**The reduction in CHP electricity and heat outputs (as shown in table 1 above) is result of a number of factors, improved manufacturing efficiencies led to reduction in heat demands, the economic situation in the UK and the recession which impacted on manufacturing outputs and reduction in CHP operation. This is very noticeable as most (over 90%) of CHP capacity in the UK is at industrial sites.**

**Table 2:- UK CHP Share of Total Generation and Primary Energy and CO2 Savings (see notes)**

Year	CHP Electricity Production (GWh)	Total UK Electricity Production (GWh)	Share of CHP in total electricity generation as %	CHP Primary Energy Saving (PJ)	CHP Carbon Saving (MTCO <sub>2</sub> )	CHP Fuel Input ( PJ)	CHP Primary Energy Saving as % of Base Case Primary Energy input <sup>1</sup>
2005	27,235	398,360	6.8%	63	9.102	343	15.5%
2006	25,209	397,282	6.3%	63	7.196	343	15.6%
2007	25,343	396,781	6.4%	59	8.187	319	15.7%
2008	25,001	388,693	6.4%	60	8.534	310	16.1%
2009	24,511	376,740	6.5%	55	7.015	303	15.5%
2010	23,644	381,128	6.2%	54	7.113	302	15.1%

*Notes:*

*1) Base Case Primary Energy input is the primary energy input (PJ) without CHP (i.e. CHP Primary Energy Saving + CHP Fuel Input)*

### **3. Barriers to high-efficiency cogeneration**

Q8 Please give your views on the current barriers to high-efficiency cogeneration in your country:

barriers in relation to administrative procedures (authorization, coordination among competent authorities, streamlined simplified procedures, etc);

barriers in relation to electricity grid system and tariff issues (including specific measures for small scale and micro cogeneration units);

- other barriers (internalisation of external costs, energy prices, financial & technical barriers, etc) in accordance with Articles 9 and 6 of the cogeneration Directive 2004/8/EC.

Indicate the measures to overcome them.

**In recent years the CHP industry has been adversely impacted due to the spark spread – the difference between the price received for the electricity and the cost of generation – not being large enough to provide an adequate return on investment. More recently, the adverse economic situation in the UK and mainland Europe has made obtaining financing for conventional CHP increasingly difficult.**

**While there are obstacles to the installation of CHP that either cannot be removed or for which it would be inappropriate to make interventions to remove (such as gas and electricity prices), there are a number of barriers currently operating where corrective action is possible through the regulatory framework. These are discussed below, together with the measures that either can be or are being adopted to overcome these barriers.**

#### **Upgrading the distribution network**

**A barrier to the installation of distributed generation including CHP is the cost associated with upgrading the distribution network. This upgrade is required to move from a situation where electricity is taken from centralised power plants and delivered to consumers to one where small-scale generators, such as CHP installations, can sell surplus power all the time whilst maintaining the integrity and reliability of the network. A significant increase in the supply of low carbon and renewable energy sources will be required to meet international obligations to reduce carbon emissions. Transmission and distribution networks will need to be upgraded to support a new generating mix.**

**As part of the electricity distribution price control arrangements that run from 1 April 2010 to 31 March 2015, Ofgem, responsible for the economic regulation of the electricity and gas industries in Great Britain (GB), operates the Low Carbon Networks (LCN) Fund. The Fund allows up to £500m support to projects sponsored by the distribution network operators (DNOs) to try out new technology, operating and commercial arrangements. The objective of the projects is to help all DNOs understand what they need to do to provide security of supply at value for money as GB moves to a low carbon economy.**

#### **Access to mains gas**

In most cases, the installation of CHP requires good, reliable access to the gas and electricity networks. Some parts of the UK have little or no access to mains gas. In these situations potential CHP schemes would tend to rely on diesel as the fuel. However, the incentive to run CHP on diesel was not as strong as for running on natural gas, since there is no climate change levy on diesel and therefore no CCL rebate to enjoy when running CHP on this fuel. In short, using diesel in CHP would still incur the excise duty cost. In recognition of this from 1st January 2006 diesel used in CHP was treated as exempt from Hydrocarbon Oil Duty Rates. This provides a financial motivation for sites considering the use of CHP, which do not have access to the gas grid, to implement CHP at their sites, as there is now a financial incentive to do so.

There are three main non-financial constraints are slowing the growth of CHP in the UK, namely planning, informational barriers and the absence of an established market for heat.

#### **Planning and permitting:**

CHP schemes need to be relatively close to where there is a demand for the heat they produce. It is not always easy to arrange this. The newly established Infrastructure Planning Commission, will take decisions on planning applications for nationally significant energy infrastructure. The requirement for developers to demonstrate that they have fully considered CHP will continue.

As part of existing pollution control regulation, European energy efficiency guidance encourages the uptake of CHP and better use of surplus heat. The UK Government will continue to work with the regulators who provide the permits under Integrated Pollution Prevention and Control to encourage energy efficiency in an industrial and large commercial context.

#### **Informational barriers:**

There is a clear need to improve awareness and understanding of CHP technologies and the potential for better use of surplus heat, and create an environment where potential heat customers and generators can receive advice and information quickly and efficiently. Key audiences will be varied – it might be individual householders for micro-CHP, small businesses for packaged CHP solutions, housing developers or local planners who might need to understand the potential in their local area for CHP.

In October 2008, DECC launched CHP Focus, a website and free helpline service for assisting the development of new and existing CHP schemes. The CHP focus website includes downloadable guides to CHP, giving detailed advice on the issues developers need to consider. The helpline service is available for developers with specific questions for technical experts.

The UK Government continue to support to CHP Focus and development of up to date supporting information and provide helpline services to existing and potential CHP developers.

#### **Market issues:**

Potential buyers of heat can be put off because there is no established market for buying and selling heat, such as those that exist for gas and electricity. Large users of heat, who may be used to operating in gas markets that have published reference prices and standard contract terms, face the same uncertainties.

The UK Government under their Energy Market Reform are also considering additional measures for incentivising low carbon generation including:

- Structuring an Emissions Performance Standard (EPS) – which sets as an annual limit the amount of carbon new fossil-fuel power stations can emit- to avoid acting as a disincentive to investment in CHP, as far as is practicable.
- Varying a new system of long-term contracts in the form of Feed-in Tariffs with Contracts for Difference (FiT CfD) that provide clear, stable and predictable revenue streams for investors in low-carbon electricity generation- in order to develop an approach that is best suited to each of the low-carbon generation types. CHP is being considered as part of this mechanism.

#### **4. Guarantees of origin and support schemes**

Q9 Article 5 of the Directive requires Member States to ensure that accurate and reliable guarantees of origin are issued according to objective, transparent and non-discriminatory criteria. Please indicate what is the situation concerning the implementation of this measure in your country (information on primary energy savings, type of registration system)?

We expected a low demand for the Guarantee of Origin certificates (CHPGO), which has proven to be the case with no CHPGOs requested to date. The UK has developed a simple system for issuing CHPGO, administered by the CHPQA Administrator. CHPGO certificates will not be used in the UK as the basis for providing public support to CHP. Public support in the UK continues to be based on the CHPQA certificate which is in full compliance with Article 12.2 of the Directive. This is explained further under Article 12.

The UK CHPGO system has been in place since the end of August 2007. The Final Regulatory Impact Assessment, an Explanatory Memorandum and a Transposition Note have been drafted and approved by the appropriate UK Government Ministers. The Statutory Instrument (SI) has been laid before the UK Parliament and came into force on the 28th February 2007. These regulations apply to GB. Northern Ireland and Gibraltar are following the same approach.

For the purposes of Article 5(2) of the Directive, the Secretary of State for Energy and Climate Change is designated as the competent authority.

Q10 Does your country have support schemes for cogeneration/CHP based on Directive 2004/8/EC (operational and/or investment aid)? What kind of support is provided (feed-in tariffs, certificates and quota, priority access to the grid,...)? Are they designed to provide stable long-term investment conditions? Which sectors will be targeted (agricultural and/or industrial and/or heating cogeneration)?

The UK Government recognised that CHP makes a significant contribution to the UK's sustainable energy goals, bringing environmental, economic, social and energy

security benefits and is projecting and monitoring the growth of installed CHP, to ensure it is making sufficient contribution to carbon budgets and renewable energy targets. Renewable CHP is increasingly playing a major role in meeting all the UK targets for reducing greenhouse gas and carbon emissions and the 2020 target for renewable energy.

The UK Government recognised that further interventions in the market would be needed to help support this sustainable energy technology and a range of support measures have been introduced in order to encourage the growth of CHP.

These support measures include:

- Exemption from the Climate Change Levy, introduced in 2001 worth 0.48p/kWh on electricity and 0.15p/kWh on Gas, from all fuel inputs and electricity outputs from Good Quality CHP,
- Eligibility for Enhanced Capital Allowances for Good Quality CHP, introduced in 2001.
- Business Rates exemption for CHP power generation plant and machinery
- Reduction in VAT on certain grant-funded domestic micro-CHP installations.
- Extending the eligibility for Renewable Obligation Certificates to include mixed waste plants which use Good Quality CHP. This adds CHP to the list of eligible advanced conversion technologies
- From April 2009, CHP plants fuelled by biomass received two Renewable Obligation Certificates (ROCs) for each MWh of electricity, compared to 1.5 ROCs for biomass power-only plants. The Government has also confirmed that the Renewables Obligation will continue up to 2037, providing long-term certainty about this source of revenue for renewable generators.
- Favourable treatment in Phases II of the EU Emissions Trading Scheme. CHP, as a low carbon technology, has benefited from the EU ETS as it does not have to buy as many allowances to emit CO<sub>2</sub> as conventional power stations.
- CHP also benefits from the operation of the Carbon Reduction Commitment, which introduced carbon trading for large non-energy intensive industries. In particular, CHP heat used on site or exported to other consumers will be treated as if it were zero carbon, even if it comes from fossil fuels.
- Established feed-in tariffs (FIT) for distributed generation, including gas fired micro-CHP with capacity less than 2 KWe.

In addition:



- **In December 2006 new power station consents guidelines to encourage the development of CHP were published. In the UK, proposals for new power stations are subject to a system of statutory consent. In England and Wales, those over 50MWe are subject to the consent under section 36 of the Electricity Act 1989 and those below from local planning authorities under the normal planning regime. Developers have to show that they have explored fully any opportunities for existing and likely local business or community uses of heat. To facilitate this, the Guidance contains new heat maps which were developed by the Department of Energy and Climate Change (DECC), indicating potential local heat customers. Whilst the UK CHP Development Map's original purpose was to assist power station developers consider the opportunities for supplying heat and delivery of CHP as required under planning policy, making them more efficient. Now, following a major upgrade, it can also be used by both small and large organisations to help identify the locations where the supply of CHP heat would have the greatest potential, and therefore the largest positive environmental impact. The map includes heat loads across all UK sectors including industrial, commercial, public and domestic.**

Q11 How much money on a yearly basis has been provided in this way in the past years to the promotion of high-efficiency cogeneration in particular? And how much money is expected to be made available on a yearly basis to the promotion of high-efficiency cogeneration in the coming years?

**Since 2001, CHPQA has provided the UK's methodology for assessing the quality of CHP schemes, and their qualification as Good Quality CHP for all or part of their inputs, outputs and capacity. Certification issued under the CHPQA programme is used for determining the eligibility of Schemes for fiscal or other benefits and for determining compliance of Schemes with regulatory requirements where quality is relevant to entitlement.**

**The value of the Climate Change Levy exemption for Good Quality CHP in the UK is in the order of €60-80 million per year (total value to CHP operators of about €600-800 million since 2001).**

**The total Enhanced Capital Allowance tax reduction benefit for investment in Good Quality CHP, since 2001, is estimated to be in the order of €60 million for a total investment in the order of €1.2 billion.**

**The Renewables Obligation Order which came into force on 1<sup>st</sup> April 2009, provides Good Quality CHP Schemes fuelled wholly by biomass with an uplift in ROCs benefit from 1.5 to 2 ROCs/MWh and schemes fuelled by waste with 1 ROC/MWh. In the first 2 years since the Order came into force, the value of the additional ROCs issued has been estimated to be in the order of €15-20 million per year to CHP operators.**