

**DIRECTIVE 2004/8/EC
PROMOTION OF COGENERATION**

IRELAND

REPORTING UNDER ARTICLE 6(3)

Date: 11th October 2011

1. Introduction

Article 10 of Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market requires Member States to report to the European Commission on a variety of aspects of cogeneration.

2. Reporting Under Article 6(3)

Member States shall for the first time not later than 21 February 2007 and thereafter every four years, following a request by the Commission at least six months before the due date, evaluate progress towards increasing the share of high-efficiency cogeneration.

2.1 Overview

This is the second report under Article 6 (3) of the CHP Directive 2004/8/EC. It was requested by the European Commission through a communication with the Irish Ambassador on 11th April 2011. It is a follow on to the first report by Ireland which was submitted on 14th May 2010 and to which reference should also be made.

2.2 Status of CHP deployment

At the end of 2010 there were 280 MW_e of operational CHP capacity. In 2010 these units generated 1.92 TWh of electricity and 3.32 TWh of useful heat, while providing 7.82 PJ of primary energy savings and 534,000 tonnes of CO₂ emissions savings.

The development of CHP in Ireland has led to primary energy savings (PES), CO₂ emissions reduction and reduction in import dependence. Comparing data from 2004 with 2010

- PES has increased by a factor of approximately 8.5 to 7.82 PJ, or approximately 0.5% of national total primary energy requirement (TPER) in 2010, and
- CO₂ emissions reduction has increased by a factor of approximately 4 to 534,000 tonnes per annum in 2010.

Because the fuels, whose consumption is reduced by the application of CHP, are effectively 100% fossil fuels, 94% of which is imported, the import dependency reduction in 2010 is equivalent to 94% of the PES or 7.35 PJ (7.82 x 0.94). This is equal to approximately 0.5% of TPER in 2010.

Please refer to completed spreadsheets attached.

3. DG Energy Template headings

3.1 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 Directive 2004/8/EC is fully transposed, with the exception of Article 5 – Guarantee of Origin (GOO). Consideration was given to including Guarantee of Origin in recent regulations (S.I. 147 of 2011), but it was decided to await the new Directive on energy efficiency.

Essentially the Commission for Energy Regulation (CER www.cer.ie) have the power to do the certification of HE CHP under S.I. 298 and 299 of 2009, but not to give guarantees of origin

To date, no formal requests for GOO have been received.

Applications for certification as HE CHP are assessed by the CER and its technical advisors. A unit is certified as high efficiency where a primary energy saving (calculated in accordance with 2004/8/EC) greater than 10% (or greater than zero in the case of small-scale or micro CHP) is shown.

Certification as HE CHP qualifies the unit for priority dispatch, for access to the relevant national support scheme (REFIT) as appropriate and relatively early connection to the grid¹ in defined circumstances.

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,...).

Directive 2004/8/EC was transposed into Irish legislation by Section 6 of the Energy (Miscellaneous Provisions) Act 2006 which inserts Section 7 into the Electricity Regulation Act, 1999. S.I. No. 298 of 2009 commences section 6 of the Energy (Miscellaneous Provisions) Act 2006. S.I. No. 299 of 2009 appoints the CER to calculate and certify the actual power-to-heat ratios of the cogeneration technologies specified in Annex 1 to Directive 2004/8/EC. This appointment was made by the Minister in the exercise of the powers conferred on him by Section 7(2) of the Electricity Regulation Act, 1999.

S.I. No. 499 of 2009 has the purpose of giving effect to Article 8(1) of the Directive and provides that where the CER calculates and certifies the actual power-to-heat ratios the CER shall also calculate the relative amount of primary energy savings (“PES”) for that CHP unit in accordance with section 7 of the Act. Based on this calculation the CER must include a statement in the certificate as to whether the CHP unit is high efficiency. In S.I. No. 499 of 2009 “certificate” is defined as “a certificate certified by the Commission appointed under, to calculate actual power to heat ratios as specified in, the Electricity Regulation Act 1999 (Appointment of Person to Calculate Power to Heat Ratios of

¹ Subject to criteria, please see the CER decision paper “Treatment of Small, Renewable and Low Carbon Generators outside the Group Processing Approach” CER/09/099, www.cer.ie

Combined Heat and Power Units) Order 2009 (S.I. No. 299 of 2009)”. A copy of this Certificate (or any amendment) must be provided to the transmission system operator (TSO). Where the TSO receives such a certificate the TSO must give priority dispatch to high efficiency CHP (HE CHP) insofar as the operation of the transmission system permits. This gives effect to Article 8(1) of the Directive as Article 8(1) refers to priority dispatch provisions elsewhere in EU law.

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

Under Article 5 of the Directive – Guarantee of Origin

Refer to Q1 above.

Under Article 6 of the Directive – National Potential

Ireland has carried out an assessment of national potential for high-efficiency cogeneration and published the results in *Combined Heat and Power (CHP) Potential in Ireland* in 2009, available at http://www.seai.ie/Publications/Your_Business_Publications/CHP_potential_in_ireland_2009.pdf.

Following a request from DGTREN, Ireland submitted CHP projections to 2020 in May 2010 under three different CO₂ price scenarios by completing a template provided by DGTREN.

Under Article 7 of the Directive – Support Schemes

From 2006 to 2010 Ireland provided capital grant support to small scale fossil fired CHP and to biomass CHP and anaerobic digestion CHP. All projects supported had to demonstrate compliance with the threshold values in Annex III(a) when applying the methodology in Annex III(b) of Directive 2004/8/EC.

Ireland has an existing application to DG Competition for State Aids clearance for a REFIT which has preferred rates for biomass CHP and anaerobic digestion CHP. Projects which receive these REFIT preferred rates will have to demonstrate compliance with the threshold values in Annex III(a) when applying the methodology in Annex III(b) of Directive 2004/8/EC.

Under Article 8 of the Directive – Grid and tariff issues

The Single Electricity Market (the SEM) on the island of Ireland was established in November 2007 and is a mandatory gross pool market. Here, generators do not have to find a supplier to contract with bilaterally, rather they bid in to the pool. Also, although participation in the SEM pool is mandatory, smaller generators below a defined de minimis level (currently 10MW_e) do not have to do so affording them the option to trade outside of the pool and avoid administrative costs associated with participation.

The rules of the SEM are published on the web site of the SEM market operator (SEMO <http://www.sem-o.com/Pages/default.aspx>) as are half hourly prices set in the SEM.

Under Article 9 of the Directive – Administration/authorisation procedures

The procedure for granting authorisation to construct a generating station is a necessary part of the process of developing a CHP facility. The Commission for Energy Regulation (CER www.cer.ie) has taken actions which are beneficial for the development of CHP as follows:

- Generators with a capacity not exceeding 1 MW_e, which covers all small scale and micro CHP, are not required to apply to the CER for authorisation and *stand duly authorised*, so removing an administrative procedure.
- Generators with a capacity not exceeding 1 MW_e, which covers all small scale and micro CHP, are also considered to *automatically stand duly licensed*, so removing an administrative procedure.
- For generators with a capacity greater than 1 MW_e, the CER must ensure that an application for authorisation must meet nine broad criteria including
 - *That the Commission is satisfied that, if it grants the authorisation, energy will be used efficiently in the course of any activities carried out under the authorisation,*

a criterion which could be seen as particularly favourable to CHP.

- For generators with a capacity greater than 1 MW_e, the administrative process requires completion of a single application form which is assessed by a single authority – the CER.

Under Article 10 of the Directive – Reporting

Ireland submitted reports under Articles 6(1), 9(1) and 9(2) of Directive 2004/8/EC in 2009. A report under Article 6(3) was submitted in May 2010 and a report under Article 5(3) was submitted in February 2011.

For Article 10(3) Ireland submits annually statistics on CHP through the Eurostat questionnaire.

Under Article 12(2) of the Directive – alternative calculation

Ireland does not apply the alternative calculation, but rather the procedure laid out in Annex II(b) of Directive 2004/8/EC to determine the quantity of electricity from CHP and Annex III(b) of Directive 2004/8/EC to calculate the primary energy savings.

Implementation of the Directive was focused on its compulsory provisions. The underlying market structure in Ireland is not conducive to significant penetration of CHP. In particular, the nature of industrial heat loads makes it unlikely that many additional large scale CHP projects will be developed.

However the *Combined Heat and Power (CHP) Potential in Ireland* report found that there was latent potential in small scale CHP applications in the commercial sector as well as opportunities for micro-CHP in both the commercial and domestic sectors. With regard to micro-CHP in commercial applications, The Sustainable Energy Authority of Ireland (SEAI) has carried out a pilot project involving 13 different sites. The project report, which is available at http://www.seai.ie/Publications/Your_Business_Publications/Commercial_micro-CHP_Field_Trial_Report.pdf concluded that in commercial sites micro-CHP systems that are well designed and installed deliver reasonable levels of efficiency and CO₂ savings, and are at least as cost-effective as competing alternative energy technologies, such as solar thermal, small scale wind, and solar photo-voltaics. The project also demonstrated that on most sites micro-CHP systems could achieve a payback of between 4 and 8 years, with no support.

SEAI is currently carrying out a monitoring programme on a pilot domestic micro-CHP project involving 6 properties in the Dublin area and a report should be published by end June 2012.

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

Ireland does not apply the alternative calculation method, but rather the procedure laid out in Annex II(b) of Directive 2004/8/EC to determine the quantity of electricity from CHP and Annex III(b) of Directive 2004/8/EC to calculate the primary energy savings.

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?

The existing threshold values for the calculation of electricity from cogeneration referred to in Annex II(a) are appropriate and do not need to be reviewed.

The existing threshold values for the calculation of efficiency of cogeneration and primary energy savings referred to in Annex III(a) are appropriate and do not need to be reviewed. Ireland has provided input to the commission on the review of the reference values used for the calculation of primary savings contained in Commission Decision of 21 December 2006 and has indicated agreement with the Commission document S-647728 – Draft Decision Reference Values circulated on the 1st June 2011.

3.2 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?

The operational CHP capacity at the end of 2010 was 280 MW_e, which was the same as that which was operational at the end of 2009. This was 32 MW_e below the most optimistic projection of the *Combined Heat and Power (CHP) Potential in Ireland* report published in 2009. However the output from these operational units increased from 2009 to 2010 as follows:

- for electricity from 1.8 TWh to 1.92 TWh (+7%), and
- for heat from 3.05 TWh to 3.32 TWh (+9%).

The barriers to CHP development are still considerable, as described in Q8 under “other barriers” below. The general economic climate is particularly difficult and militates against investment in CHP, such that there has been little or no activity in terms of new plant development.

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.

Refer to Q6 above.

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.

Barriers in relation to administrative procedures

The barriers in relation to administrative procedures have generally been addressed, as described in Q3 under Article 9 – Administration/authorisation procedures above.

Barriers in relation to electricity grid system and tariff issues

The barriers in relation to electricity grid system and tariff issues have generally been addressed, as described in Q3 under Article 8 – Grid and tariff issues above.

Other barriers

There are a number of significant barriers to CHP development in Ireland ranging from market structure through economic factors to appropriate heat loads to ensure compliance with the requirements of Directive 2004/8/EC.

The structure of Ireland's industrial base and its housing pattern are not conducive to significant penetration of CHP. Ireland's industry is primarily based on high value, low energy intensity sectors such as pharmaceuticals, ICT and services industries. One energy intense industrial site (an alumina refinery) has a 160 MW_e cogeneration plant which accounts for more than 50% of the total national installed capacity. A recently opened waste-to-energy plant with a generating capacity of 22 MW_e is located in an area with no immediate local heat load. District heating which is often associated with CHP plants in other European countries has no tradition in Ireland due to the distribution of a relatively small population, a mild climate and low density and low rise housing. Indeed it is possible that improvements in the energy efficiency of Irish housing stock that is currently being driven by government legislation and capital supports will militate further against district heating by making its economic viability more challenging.

The current economic climate is not conducive to investment generally, let alone to investment in CHP. In addition, the spark gap (ratio between electricity and gas price) remains at a level (typically between 3.5 and 4.5 for industrial applications) which is insufficient to provide an acceptable payback for most CHP operations. There are instances where units have been mothballed as a result.

Heat loads that are necessary for CHP to be economically viable and to enable compliance with Directive 2004/8/EC are not readily available in Ireland. While some of the largest industries (cement & periclase manufacture and mining) consume a significant proportion of industrial fossil fuels and electricity, they are not suited to CHP due to the mismatch between the heat output from CHP plants

and the thermal demand of those industries. Other large scale industries, such as the dairy sector, operate on a seasonal basis which does not favour economic operation of CHP.

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)?

Refer to Q1 above.

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)?

In addressing National targets under the Renewable Energy Directive 2009/28/EC, Ireland has an existing application to DG Competition for State Aids clearance for a REFIT which has preferred rates for biomass CHP and anaerobic digestion CHP in the agricultural, commercial and industrial sectors. Projects which receive these REFIT preferred rates will have to demonstrate compliance with the threshold values in Annex III(a) when applying the methodology in Annex III(b) of Directive 2004/8/EC.

Support by way of REFIT will be provided for a 15 year period, with tariffs index linked to the consumer price index (CPI). It is anticipated that 100 MW_e of biomass CHP and 50 MW_e of AD CHP will be supported under this support programme.

The support for cogeneration that will be provided by the REFIT is intrinsically linked to the achievement of the goals of the National Renewable Energy Action Plan (NREAP) prepared by Ireland under the Renewable Energy Directive 2009/28/EC. The anticipated 100 MW_e of biomass CHP and 50 MW_e of AD CHP are important contributions to the national renewable energy target of 16% by 2020.

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?

Ireland has operated two capital grant support programmes through the Sustainable Energy Authority of Ireland (SEAI) from 2006 to the end of 2010.

The SEAI CHP Deployment Programme provided funding of up to 30% of defined eligible costs for small scale, fossil fired CHP. Under the programme 68 projects were supported resulting in a total installed capacity of 15.7 MW_e. This programme was closed at the end of 2010.

The SEAI Biomass CHP / AD CHP Call for Proposals was targeted at biomass CHP and AD CHP. The grant level was also up to 30% of defined eligible costs with no specified size limits. This programme supported one biomass CHP project (installed capacity of 3 MW_e) and one AD CHP project (installed capacity of 250 kW_e). This programme was closed at the end of 2010.

In the period 2006 to 2010, through these two programmes, €6.5 million in capital support was provided to small scale fossil CHP and biomass / AD CHP projects.

The REFIT mentioned under Q10 is a feed in tariff system, which acts as a floor price guarantee for generators from biomass. As such, there is no defined 'budget' for the measure, as the amount of support required will vary from year to year due to varying electricity prices. The measure is funded through the 'Public Service Obligation', a measure that has been in place for a number of years.

4 Summary

The operational CHP capacity at the end of 2010 was 280 MW_e, which was the same as that which was operational at the end of 2009. However the output from these operational units increased from 2009 to 2010 as follows:

- for electricity from 1.8 TWh to 1.92 TWh (+7%), and
- for heat from 3.05 TWh to 3.32 TWh (+9%).

The barriers to CHP development are still considerable, including the structure of Ireland's industrial base and its housing pattern. The continuing trend in the spark gap is not favourable to development of CHP. In addition, the general economic climate is particularly difficult and militates against investment in CHP, such that there has been little or no activity in terms of new plant development in the past year.