

Energy perspectives

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cornwallenergyassociates

Large scale CHP suffers from government neglect

The end of October saw the CHPA's annual conference, *CHP: Forward not back*, timed to coincide with the ninth national energy efficiency week. Outside of the diminishing number of operators and developers, not many took note. This muted context should not come as a surprise. The government's strategy on combined heat and power (CHP) has limped on lamely for several years, at a time when special cases have been pleaded largely successfully for many other environmentally benign technologies. In stark contrast the government's parsimonious approach to CHP has been conspicuous of recent years for offering virtually nothing to support an increasingly troubled industry.

Aiming high ...

The Labour Party first proposed

a target for 10GWe of CHP capacity by 2010 when it was in opposition. In government, it formally confirmed the target in 1999 as part of the Climate Change Programme and included it in its 2001 manifesto. It continues to maintain that CHP is "the most cost-effective single non-transport measure in the climate change programme" - and that achieving the 10GWe target would reduce annual emissions by 4.8-9.5mn tonnes of carbon.

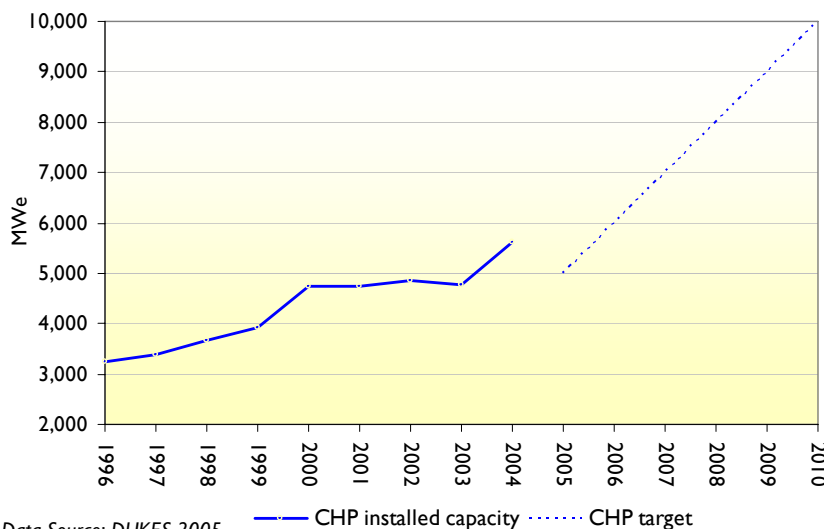
... But off-target

But UK CHP use has remained at approximately 6pc of total electricity supplied for the past 10 years – a level well below the EU average and comparing poorly with other Members States, some of which have achieved levels as high as 40pc. It is clear that across the range of

technologies and generation sizes available, the UK has scarcely tapped the level of potential for CHP that exists.

A CHP strategy to deliver the target, was repeatedly delayed, appearing eventually with a splutter in 2002. The government asserted then that it believed that its target could be met without introducing a CHP obligation which, it claimed, would be too costly. A single gesture—a time-limited exemption of CHP from CCL—did work well initially. It led to the development of the Immingham 734MW project, and it also helped to improve load factors of existing plant. But the policy is no longer delivering new development as its future existence cannot be relied upon, and no replacement is in sight. Since then remaining industry confidence has collapsed.

CHP capacity and target



Data Source: DUKES 2005

— CHP installed capacity - - - - - CHP target

Unfulfilled potential?

What recent policy focus there has been on CHP is fixed on new micro technologies – very worthwhile in their own right but ultimately distracting for the proponents of larger scale CHP. Further, such pre-occupations are not likely to help government extract itself from the increasing problems arising from the visibly widening gap between its carbon abatement targets and delivery. And in contrast to other member

THE PRIME MINISTER

The benefits of CHP are impressive. CHP's high energy efficiency levels cut energy costs for UK businesses, increasing their competitive edge. Community Heating schemes using CHP take disadvantaged people out of fuel poverty, providing affordable warmth and cheaper electricity from a secure, local source, supporting sustainable community development. And CHP reduces carbon emissions substantially, playing a vital part in combating climate change.

This is why the Government has demonstrated its support and encouragement of CHP. Earlier this year, Michael Meacher inaugurated the Whitehall District Energy Scheme, the Government's flagship Community Heating system, which supports all the main buildings in Whitehall, including Downing Street itself.

As we move into the new century, we are at a crucial staging post in our drive for more CHP, and the strategy for working together with CHP companies and users to achieve the target.

This Guide sets out the benefits of CHP and Community Heating and will play its part in persuading more businesses and housing managers that CHP is the right energy solution for them.

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states, the failure to ensure that CHP is properly rewarded for its carbon saving role in the formulation of the phase I National Allocation Plan (NAP) is a significant missed opportunity. The NAP bizarrely penalises rather than rewards CCGTs that have saved carbon by adding a heat load to their power production by subjecting them to the generation sector cutback in allowances. Another opportunity to exempt power exports from CHP from the Renewables Obligation, a relatively simple measure, was also overlooked at the time of the Energy Act 2004.

Power prices high, spark spreads low

At the same time the CHP industry has been badly hit by a combination of high gas prices, then low electricity prices and the effects of NETA, whose design assumes all power plants are built solely to supply power and penalises plant that is not flexible. But while electricity prices have strongly recovered, the key measure—the spark spread, the difference between gas and electricity prices—has remained very adverse. Indeed, looking forward it is very difficult to construct credible sce-

narios for future energy prices at least in the foreseeable future that entail wider spark spreads than even the higher ones seen of late, which seem to include full pass through of marginal carbon costs in the price of power. Put bluntly, the CHP investment decision is a simple 'no' for industry even now, despite record high prices at a time when efficiency considerations should be at their highest.

There is a market structure dimension that aggravates the problem. Low spark spreads in the wider generation market deter investors from outside the Big

Six because they lack the retail portfolios to sell their power on at stable prices. This situation may suit the major integrated players as they keep new entrants out, but major CHP developers have withdrawn from the market, (including, incidentally, its proponents within the Big Six). The worry now is that going forward others will overlook it too and build CCGTs when the market recovers, passing by the opportunity for the UK to make substantial reductions in primary energy usage and in carbon emissions.

Flawed assumptions

The government's confidence that no further measures are needed to deliver the target was first bolstered, but then fatally undermined, by its own advisers Cambridge Econometrics. Their advice released with the draft CHP strategy predicted that CHP capacity will reach 9.3-10.3MWe by 2010, depending on gas and electricity prices and the effects of NETA. The measures in the strategy themselves were expected to deliver 2.5GWe by 2010—one-third of which is down to the extension of the climate levy exemption. But reading the small print

Ineos Chlor CHP site at Runcorn



Number and capacity of CHP schemes

2005	Number of schemes		Total capacity MWe	
		%		%
Less than 100 kWe	618	40%	38	1%
100 kWe to 999 kWe	665	43%	162	3%
1 MWe to 9.9 MWe	194	13%	756	13%
10.0 MWe and above	75	5%	4,650	83%
Total	1,552		5,606	

Source: DUKES 2005

reveals that Cambridge Econometrics reckoned in the absence of "special support", only 7.5GWe of CHP capacity would be delivered by 2010. A similar study in 2000 for Forum for the Future put the figure at just 6.6GWe, even though market conditions at the time were more favourable. Our own expectation is that unless something changes there is unlikely to be significant build beyond 6GW.

The CHPA estimates that about 1,100MW of capacity has received consent since the start of 1999 but is now "stalled" by unfavourable market conditions. It took the unprecedented step of commenting at the time of the commissioning of the landmark Immingham CHP plant owned by ConocoPhillips in autumn 2004 that the scheme could be the UK's last, noting that: "no other such industrial CHP developments are being either planned, developed or commissioned in the UK. The government fails to realise just how off-track it is in achieving its CHP target by the end of this decade, with a policy framework that is a triumph of hope over reality."

Time for a rethink

The government's strategy for

industrial CHP is in disarray. The immediate efficiency, environmental and security of supply benefits of the technology are significant, even before issues of industrial and regeneration policy are taken into account. We would hope that as part of its review of the Climate Change Programme the government has gone back to basics and can set to one side flawed assumptions and the mis-forecasts of the past.

More specifically, it needs to indicate to the industry that:

- it intends to agree the carve out of CHP volumes from the RO to kick-start some projects;
- it understands the need for a pro-active approach to CHP in the phase 2 EU ETS allocation strategy; and
- it intends to extend or replace the Climate Change Levy output exemption for a further ten year period.

These measures should not be seen as special favours: the first is a small, affordable step that recognizes the efficiency and abatement merits of an established technology

that can make a measurable contribution to existing carbon abatement targets. With the creation of a distinct CHP sector within the NAP the government should ensure that a phase 2 delivers the positive boost that Ministers and the industry were led to anticipate would occur. By extending or replacing CCL exemption, the UK can continue to incentivise the large-scale exporting CHP plant that can make the biggest reduction in carbon emissions and primary energy usage.

And this is without consideration of further opportunities which will arise as new technology options become available. These could include biomass fired plant, fuel cells, anaerobic digestion, greater demand for cooling (tri-generation) and geothermal-based schemes. The government needs to undertake comprehensive analysis, as it has for renewables, to determine the wider UK potential for CHP applications, and consider what support structures may be necessary to realise this. But in doing so it needs to build on, not undermine, the ability of industrial CHP to make a full contribution to its carbon abatement strategy.

Links to more information

Defra

www.defra.gov.uk/environment/energy/chp/#info

Energy Saving Trust

www.est.org.uk/community/

CHPA

www.chpa.co.uk

Carbon Trust

www.thecarbontrust.co.uk/carbontrust/

CHP Club

www.chpclub.com

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