

THE PROSIECT GWYRDD SHORT-LIST (10th JANUARY 2011)

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Introduction

Prosiect Gwyrdd has short-listed four companies,¹ all of whom are likely to want to build 'energy from waste' incinerators. Why incineration, when it is bad environmentally, a risk to public health and there are alternatives? Whether it is a case of the peculiar fixation of the UK and Welsh Assembly governments with incineration or poor decision making by Prosiect Gwyrdd, it may not be too late to steer things in a better direction.

Prosiect Gwyrdd

Prosiect Gwyrdd has brought together five LAs to meet EU targets for reducing the amount of biodegradable waste sent to landfill. Although ostensibly 'technology neutral', all the way along the signs have been that the project would opt for 'energy from waste' (EFW) incineration of residual waste. Among the indicators have been:

- the size of the project, helping the economics of incinerators, which are expensive to build);
- the Project Gwyrdd Business Plan, explicitly drawn up on an assumption of EFW;
- UK and Welsh Assembly Government waste strategies, funding and regulatory policies, all of which favour incineration.

Promotion of "Energy from waste" incineration

The UK and Welsh Assembly Government (WAG) consider 'modern incinerators' to be a ready, safe and 'clean' solution, and a welcome source of energy generation to help meet 'renewable energy' targets. Their policies are encouraging the building of incinerators and discouraging alternative, more environmentally friendly technologies. As a result, such technologies competing with incineration find it is 'not a level playing field'.

It was reported in The Independent on 28th Dec 2010 that incinerators are currently being planned on more than 80 sites across the UK, while the Prosiect Gwyrdd short-list contains three companies – Viridor, Veolia and WRG – which have apparently elected for incinerators when they have the capacity and experience to build other types of facility. Interestingly, the parent company of WRG, FCC, has built or operates 12 MBT facilities with Anaerobic Digestion (AD) in Spain. Why, then, does WRG not build MBT plants in the UK? The probable reason is that UK waste regulation and funding policies favour EFW incineration.

WAG has been determined in its promotion of incineration. 'Energy from Waste' is the assumed residual waste treatment throughout its Waste Strategy ("Towards Zero Waste") unveiled in June 2010. Launching the Strategy, the Minister, Jane Davidson, said "We believe that cheap electricity is a far better outcome than methane from landfill sites. We know this is not a universally popular solution but it means facing up to the waste issue. We are determined to use every means necessary to reach our waste goals."

Recently, Waste Awareness Wales, an arm of WAG, released findings of 'new research' with the headline "Wales says burn don't bury our rubbish".² The research was a blatant public relations exercise, plainly loaded in favour of its conclusion. For a start, the survey only presented two options to respondents – 'burn or bury' – when there are modern alternatives such as mechanical and biological treatment (MBT), autoclaving and plasma gasification.

Having offered only the two options, Waste Awareness Wales demolishes one of them, saying 'landfill is running out', it is "unlikely that we will be able to build more" and 'landfill gases pollute the atmosphere'. They do not explain that the problem to be addressed is not landfill per se but the biodegradable content of waste going into it (so if technologies like MBT can remove the biodegradability, the problem could be solved). Nor do they say that

incinerators themselves will need landfill ³. Nor, with regard to air emissions, do they say that incinerators release toxic nanoparticles into the air (see below); nor that it would be less of a health risk to bury plastics – a major component of the waste stream – than to burn them.

Waste Awareness Wales then commends the respondents' only remaining choice: "burning non-recyclable rubbish to produce energy is clean, safe, and makes good economic and environmental sense." Every one of these claims needs to be examined.

Claims about incineration

- **"Incinerators only burn waste that cannot be recycled".** This is not true. WAG has proposed that Wales reach a target of 70% recycling / composting by 2025. Until it is reached, quantities of recyclable waste would inevitably be fed into incinerators if built. Indeed, why strive to reach the 70% target or exceed it, when you can put everything into an incinerator?⁴ The 70% target would be further undermined if use of incinerator bottom ash for construction purposes is classed as "recycling", as proposed by WAG – such use of ash obtained by burning recyclable materials is 'down-cycling' at best.
- **"Incinerators produce energy."** The public should not be beguiled by the term 'energy from waste'. The term should be seen for what it is – a re-branding of incinerators to make them more acceptable. The best recovery of energy from waste is achieved by maximising re-use / recycling together with anaerobic digestion of food waste. Besides, incineration is not the only residual waste treatment that can recover energy from waste. Treatments such as MBT, autoclaving and plasma gasification can all do so.

Incinerators, in fact, do not recover energy efficiently. The Waste Directive 2008/98/EC requires that new incinerators achieve efficiencies of 0.65 to be classed as 'recovery' at all. Only a tiny number built in the UK do this, and it is a measure of UK, Scottish and Wales pro-EFW policy that, despite the EC requirements, incinerators are getting built with no enforcement mechanism to ensure that they meet this required efficiency.

- **Incineration is "clean" and "safe".** Combustion produces numerous noxious substances harmful to human health.⁵ The industry and its promoters (even the Health Protection Agency ⁶) claim that 'modern incinerators' are clean. But testing and tests are inadequate. Testing is not continuous.⁷ It is not generally carried out during start-up and shut-down.⁸ Filtering devices age and break down. It has been reported in the Western Mail that in the USA – where testing is more rigorous – Covanta, one of the companies shortlisted for Prosiect Gwyrdd, has been fined hundreds of thousands of dollars for emitting cancer-causing chemicals from similar plants to the one they propose near Merthyr.⁹

As for the tests, they detect mainly larger particles captured by the pollution abatement equipment. Ultra-fine particles ('nanoparticles'), a recognised health risk particularly to the young, escape into the atmosphere and are carried many miles down-wind.¹⁰

And as for the claim that quantities are negligible compared with traffic emissions et al, a study in Sweden has identified a new modern incinerator as the single most significant source of PM2.5s. (ultra-fine particles) in the atmosphere.¹¹

Nor is it only air-emissions that are a matter of public health concern. Flue ash recovered from the stacks is highly toxic. 3,000–6,000 tonnes of it are produced from every 100,000 tonnes of waste burnt per annum. Either this would have to be transported by lorry to a toxic-waste landfill site outside Wales or such toxic landfill sites be provided in Wales.¹²

- **"Incinerators make good economic sense."** Incinerators are extremely expensive to build, due in large part to the cost of their pollution abatement equipment, hence the

scheme of Prosiect Gwyrdd to spread the cost between several LAs. Even so, the economics of building an incinerator would be less favourable were it not for the grant of £9 million per year promised by WAG.

Incinerators are further advantaged by basement-rate landfilling charges for their bottom ash, whereas MBT residues, even if stabilised (i.e. meeting the biodegradability standard), are charged full rate. If the economics of incinerators are favourable, it is in part because every means has been found by the UK government and WAG to make them so.

- **“Incinerators make good environmental sense”.** As well as toxic ultra-fine particles, incinerators typically emit between 0.7 and 1.3 tonnes of CO₂ per tonne of waste. The proposed Viridor Cardiff incinerator could thereby release over 400,000 tonnes of CO₂ per annum, and the Covanta incinerator over 870,000 tonnes. They would thus be heavy carbon emitters at a critical time for combating climate change.

The argument that such greenhouse gas emissions are somehow OK because “the energy produced by incineration avoids burning fossil fuels” is unacceptable. Besides, by 2025 all Wales’s electricity should be coming from renewables, so over the 25-year life of an incinerator contract, the claim to be avoiding fossil fuel sources is increasingly nullified.

In view of the environmental and health impacts of incineration, one must ask why ‘energy from waste’ is being so assiduously promoted by WAG as the answer to LA needs. One has to come to the conclusion that successive Ministers for the Environment, including Jane Davidson, have been badly advised.

Alternatives to incineration

Emerging technologies that can provide more flexible and environmentally friendly solutions have been ignored by Prosiect Gwyrdd and discouraged by the WAG. They include:

MBT: an umbrella term for modular treatments that include mechanical separation out of remaining recyclables and one or more biological modules (aerobic composting or anaerobic digestion). MBT is more environmentally friendly than incinerators, and more flexible – whereas incinerators demand a continuous level of waste input over a minimum 25-year contract, MBT can adapt to changes in waste volume & content. MBT plants are operative on the continent of Europe (including in Austria, Germany, Italy & Spain) and in different locations in the UK (including East London, Poole, Newcastle and Dumfries & Galloway).

MBT plants are cheaper to build than incinerators but disadvantaged by stabilised residues from them being charged full land-fill tax, in contrast to the basement rate for incinerator bottom ash. Because of this, most MBT plants currently being proposed treat their final residues thermally, by pyrolysis, gasification or plasma gasification. It is known that at least one such company applied for Prosiect Gwyrdd – but was not shortlisted.

Autoclaving: treats waste with steam at a high temperature and elevated pressure in rotating vessels, which sterilises the waste and reduces its volume by about 60%. After going through the heat process, the material is mechanically sorted to produce 20% clean (therefore high value) recyclables and 60% organic fibre – the remaining 20% being stabilised waste suitable for landfill. It is known that Sterecycle, who operate a plant at Rotherham and have been shortlisted for a project in Glasgow, applied for Prosiect Gwyrdd – but was not short-listed.

For WAG – and Prosiect Gwyrdd – it appears that only Energy from Waste incineration will do. Residual waste technologies other than incineration are not encouraged by WAG and those applying for Prosiect Gwyrdd were not chosen. The short-list should be challenged.

NOTES

1. **Covanta Energy Ltd:** is proposing a merchant EFW facility to be located at Brig y Cwm, Merthyr Tydfil; **Veolia ES Aurora Ltd:** is proposing an Energy Recovery Facility at Bowlease Common, near the Llanwern Steelworks, Newport; **Viridor Waste Management Ltd:** is proposing a merchant EFW facility at Trident Park, Cardiff; **Waste Recycling Group Ltd:** is proposing an EFW facility at the Solutia UK site in Traston Road, Newport.
2. The Waste Awareness Wales Survey was carried out in August 2010 and the Report and a Press Release “Public Attitudes to Waste in Wales” was issued on 12th October 2010.
3. Incinerator bottom ash from the combustion process at the proposed Viridor incinerator would amount to approximately 25% of input material – therefore about 75,000 tonnes per annum. Up to about a half of this would have to be landfilled.
4. Incineration supporters produce figures that claim that rates of recycling are not affected by building incinerators. We can produce data that shows the opposite, for example a report on household waste from Denmark in 2005, which found that regions with higher incineration had lower rates of recycling than those with lower incineration:

Region	Recycling	Incineration	Landfill
Hovedstaden	21%	77%	2%
Nordjylland	29%	63%	8%
Sjælland	31%	59%	10%
Midtjylland	40%	53%	7%
Syddanmark	41%	52%	6%

Recycling and Incineration data from Denmark 2005.

Councils in the UK with long contracts to supply incinerators have also seen recycling suffer:

- 1) It was reported in the Guardian on 9th Aug 2006 that East Sussex CC was “so worried it may not be able to fulfil its contract that it has now capped Lewes and Wealden's recycling levels”
- 2) In Hampshire, Veolia was found to be topping up ‘Project Integra’s’ three incinerators with recyclables from recycling centres. “We do take material from household waste recycling centres if there is a shortfall of black bag waste” admitted Project Integra Director, Steve Read. [News item in www.letsrecycle.com 2006]
5. Including dioxins, furans and heavy metals such as vanadium, manganese, chromium, nickel, arsenic, mercury, lead, and cadmium.
6. “While it is not possible to rule out adverse health effects from modern, well regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable.” Health Protection Agency publication: *The Impact on Health of Emissions to Air from Municipal Waste Incinerators* RCE 13 (Feb 2010) Prepared by R L Maynard, H Walton, F Pollitt and R Fielder
7. De Fré, R and Wevers, M (1998) have shown how spot measurements do not give an accurate indication of actual emissions: continuous monitoring over a period showed that actual emissions could be 30 to 50 times higher than spot measurements. [Underestimation in dioxin emission inventories. In: *Organohalogen Compounds*. Vol. 36.]
8. Tejima, Hajime et al.(2007) found that just a single incinerator start-up released more dioxins to air than operating the incinerator in steady state conditions non-stop for over 2 months. [Characteristics of dioxin emissions at start-up and shut-down of MSW incinerators. In: *Chemosphere*, Vol. 66, no 6, pp 1123-1130.]
9. The Western Mail, 9 Feb 2009
10. Cormier, S et al (2006) warn that “Nanoparticles are not efficiently captured by air pollution control devices, are transported over long distances, and penetrate deep into the respiratory system, all of which enhance the potential negative health impacts.” [Origin and Health Impacts of Emissions of Toxic By-Products and Fine Particles from Combustion and Thermal Treatment of Hazardous Wastes and Materials. In: *Environmental Health Perspectives*, Vol. 114.]
11. Aboh, J. et al., 2007. “Elemental contents in a medium-sized Swedish city dominated by a modern waste incineration plant.” Paper presented at the European X-ray Spectrometry Conference, Paris.
12. The nearest toxic waste-site is at Bishop’s Cleeve in Gloucestershire, where concern has been expressed by residents that, despite assurances by the site operators and the Environment Agency, studies “show beyond doubt” that hazardous waste substances spread beyond the site boundaries.