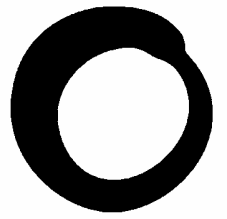


December 2003



Briefing

**Friends of
the Earth
Cymru**

**Cyfeillion
y Ddaear
Cymru**

Zero waste in Wales

**From waste disposal to the zero waste
economy**

Friends of the Earth Cymru inspires solutions to environmental problems, which make life better for people.

Friends of the Earth Cymru:

- is dedicated to protecting the environment and promoting a sustainable future for Wales
- is part of the UK's most influential environmental campaigning organisation
- is part of the most extensive environmental network in the world, with over 60 national organisations across five continents
- supports a unique network of campaigning local groups, working in communities across Wales
- is dependent upon individuals for over 90 per cent of its income.

To join or make a donation call us on 0800 581 051

Friends of the Earth Cymru, 33 Castle Arcade Balcony, Cardiff CF10 1BY

Tel 029 2022 9577 Fax 029 2022 8775 Email cymru@foe.co.uk Website www.foecymru.co.uk

Friends of the Earth Limited Registered in London No 1012357. Registered office 26-28 Underwood Street London N1 7JQ

Summary of recommendations

The UK government should:

- impose a tax on the incineration of waste;
- introduce tax credits for companies which recycle effectively;
- investigate charges and rewards for householders according to the level of participation in recycling and composting schemes.

The National Assembly for Wales should:

- implement a zero-waste policy for Wales;
- declare a ten year moratorium on the installation of municipal waste incinerators;
- set high statutory recycling and composting targets on local authorities – 50 per cent by 2007 and 70 per cent by 2013;
- support local authorities, companies, the community sector and people in waste minimisation efforts;
- introduce kerbside collections of recyclable materials for each household in Wales or implement the Household Recycling Act.

Companies, local authorities and the people in Wales should:

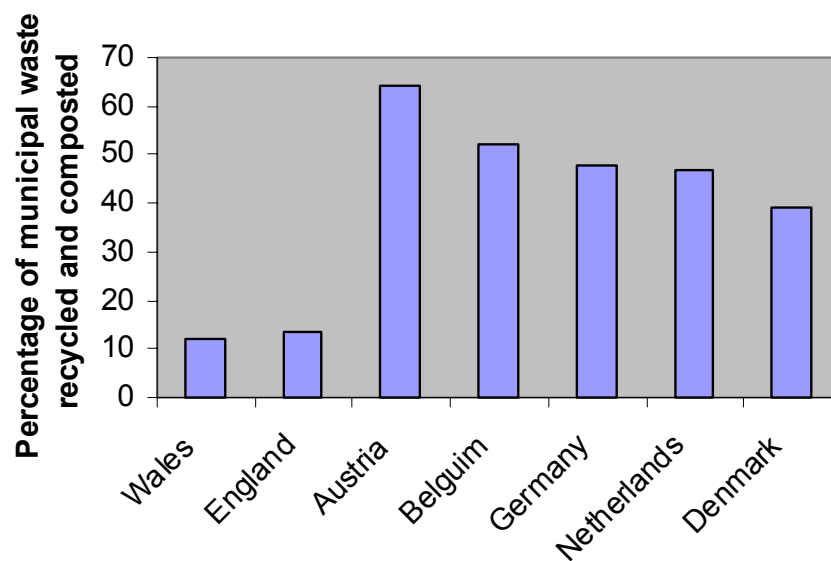
- aim at a high re-use, recycling and composting performance;
- implement waste minimisation and zero-waste policies at the grass-roots level.

Introduction

Waste disposal in Wales

In 2002/2003 ten per cent of waste collected by local authorities in Wales was recycled or composted. Compared with other countries and local authorities worldwide, Wales is still one of the worst performers in Europe for managing waste. Around 85 per cent of municipal waste in Wales ends up dumped in landfill sites.

Average recycling rates (1)



Landfill and its implications on pollution and health

Studies on the impacts of landfill sites on the health and well-being of residents living nearby suggest a link between toxic landfill emissions and the occurrence of illnesses among residents. When organic waste decomposes inside the landfill, landfill gases (mainly methane, carbon dioxide and hydrogen sulphide) are formed by bacterial activity and chemical reactions. Pressures originating inside the landfill force these gases to move and escape into the atmosphere or through the surrounding soil. The emitted gases can carry along toxic chemicals such as pesticides [2]. Surface level winds may move the gases into residential areas. Research on the incidence of congenital malformations in mothers living within 7 km of the Nant-Y-Gwyddon landfill site in Rhondda has pointed out the increase in birth defects among people living near landfill sites [3]. Likewise, increased complaints of headaches, sleepiness, respiratory symptoms, eye-irritations and sore throats are often linked to the emissions from landfill sites. A higher risk of several types of cancer has been reported near landfill sites as well [4].

The European Landfill Directive and the National Waste Strategy for Wales

The European Landfill Directive requires that by 2010 the amounts of biodegradable waste going to landfill must be reduced by twenty five per cent when measured against the 1995 baseline; fifty per cent by 2013; and sixty five per cent by 2020. Friends of the Earth Cymru welcomes this. Disposing of waste to landfill sites is wasteful and polluting.

In June 2002 the National Assembly for Wales published *Wise about Waste, The National Waste Strategy for Wales*. The strategy committed the Assembly to recycling targets slightly exceeding those being set for England. By 2009/10 the Assembly aims to see at least 40 per cent of Wales' waste recycled or composted.

A detailed survey of public attitudes to recycling in Wales was carried out by the Welsh Consumer Council in March 2002 [5]. According to the survey, 70 per cent of the respondents stated that recycling is important to them, but many are frustrated by the lack of recycling provisions. In rural Wales more than seven out of ten people (72 per cent) wanted more recycling facilities.

Assembly funding for recycling has substantially contributed to better recycling rates in Wales – most local authorities in Wales report recycling and composting rates of more than ten per cent for 2002/2003. However, despite this improvement Wales' poor recycling performance in the past years has resulted in incineration being considered as the solution to over-reliance on landfill sites.

Burning waste will not successfully phase out landfill. The growing political, scientific and community protests against incinerators highlight serious dangers and disadvantages for the environment and health.

Incinerators destroy valuable natural resources

As with our over-reliance on landfill, incineration stops us re-using and recycling products made from valuable natural resources. This has a long-term effect on the environment because virgin materials will have to be used for the production of the items that have been burnt in an incinerator. Hence, incineration of paper, wood and aluminium products contributes to the destruction of forests across the world, the destruction of natural habitats and damage to wildlife [6].

Air pollution and health

Some industrialists and politicians argue that incinerators built after 1996 do not provoke the same fears about air pollution as older plant. Although emissions from incinerators are subject to regulatory controls there is no guarantee that the standards are adequate. For

example, standards only focus on the emissions of a limited number of substances in the flue gas and ignore hazardous substances in the ash and slag. Rising levels of concentrated ill-health in communities living around incinerators are often blamed on low living standards. However, scientific studies show that modern incinerators still emit significant dangerous chemical and by-products into the surrounding environment.

Communities are exposed to daily emissions of particulates, arsenic, cadmium, copper, mercury, lead, vanadium, zinc, dioxins and furans. There are also numerous unknown compounds (many do not have a safe threshold) that form during the combustion process. People absorb these toxic chemicals and by-products from the air, water, local agricultural products and contaminated soil. The emissions add yet further to the pollution burden people are exposed to. This is especially worrying because most communities have already reached their dioxin threshold.

There are numerous studies into the effects incinerators have on public health [7]. Research is showing that employees and residents have an increased likelihood of developing serious illnesses and health problems. These may include various cancers in both adults and children; heart disease; skin conditions; allergies; immune system deficiency; respiratory problems; adverse lung functions in children; birth defects; high female birth rates; multiple pregnancy; and eye malformations.

Incinerators have long contracts

With Wales still landfilling about ninety per cent of its waste we should be dramatically increasing recycling levels rather than installing incinerators. Incinerator contracts can last more than twenty years. This means that local authorities are obliged to guarantee an ongoing supply of waste to satisfy contract requirements. With incinerator companies monopolizing waste there is limited scope to develop re-use, recycling and composting schemes.

Action point: the Assembly should impose a ten year freeze on the installation of incinerators

New technologies, old problems: pyrolysis and gasification

New technologies for dealing with residual municipal waste are now becoming more popular with local councils. Most of these variations of incineration involve a combination of two advanced thermal processes: pyrolysis and gasification [8]. These processes use high temperatures to break down any waste containing carbon. Pyrolysis degrades waste, producing char or ash, synthetic gas and pyrolysis oil. Gasification uses a controlled amount of oxygen to break down the hydrocarbons left into a synthetic gas.

These processes are often presented by companies and local councils as something different from incineration. Nevertheless, by both the legal and dictionary definitions, these

Zero waste in Wales

technologies are in fact incineration (see for example the EU Directive on the incineration of waste) [9]. They do have some advantages over traditional incineration, for example they produce fewer air emissions than mass-burn incineration. They may also create fuel for electricity and heating or can be used as a feedstock for petro-chemicals [10]. However, they also share most of the disadvantages of mass-burn incineration. They undermine recycling and composting, they do not save resources, they do not create as many jobs as recycling, the fuel produced does not make up for the energy needed to manufacture new products, they produce toxic air emissions and solid residues including ash. Furthermore, pyrolysis and gasification are likely to divert energy from true renewable energy sources such as solar, wind and wave power.

All these disadvantages underline that pyrolysis and gasification should not be regarded as a substitute or alternative to intensifying re-use, recycling and composting strategies which save energy and resources. Neither a combination of pyrolysis and gasification nor mass-burn incineration are ways to sustainable waste management in Wales.

Zero-waste

Friends of the Earth Cymru wants the Assembly to implement a zero-waste strategy.

Zero-waste is sustainable resource management: it means looking at waste as a valuable resource, therefore maximising re-use, recycling and composting while reducing product packaging, poor product design and excessive consumerism.

The Assembly should set itself a target of achieving zero-waste in Wales within twenty-five years. Adopting a zero-waste target would be the only genuinely sustainable waste policy for Wales. Re-defining waste management as resource management would benefit public health and the environment. It would also enable Wales to create new jobs in a sustainable industry.

Re-use, recycling and composting

Re-using waste is fundamental to zero-waste. Re-use prevents wastage of valuable items such as building materials, clothing, furniture, white goods, computers etc. Re-use helps to reduce production demands on natural resources.

Recycling and composting are also fundamental to a zero-waste strategy. However, the targets set in the Wales Waste Strategy are too unambitious. They will not adequately exploit the economic opportunities afforded by a zero-waste economy. Nor will they prevent a massive increase in incineration of waste in Wales. Friends of the Earth Cymru wants the Assembly to set gradual targets over twenty five years. If this was implemented now, by 2013 Wales would be recycling and composting seventy per cent of its waste.

Action point: Composting and recycling targets : 50 per cent by 2007, 60 per

cent by 2010 and 70 per cent by 2013

These targets would reduce Wales' landfill dependency faster than those set by the EU Landfill Directive (sixty five per cent reduction by 2020).

Household waste recycling and kerbside collections

The results of the 2002 Welsh Consumer Council recycling survey affirm the necessity to provide kerbside collections of recyclable materials for as many people as possible. More than eight people in ten (84 per cent) would be encouraged to recycle if a kerbside collection scheme was provided. According to another survey, conducted by the Environment Agency and covering English and Welsh consumers, householders are much more likely to recycle if containers and doorstep collections are supplied, e.g. more than half of the respondents (59 per cent) would recycle plastic packaging if collections were provided by local councils compared to only 10 per cent who would still recycle without these facilities and services [11].

These numbers indicate that recycling rates would be much higher in Wales if the National Assembly and the local authorities made decisive steps to provide more recycling facilities and collection schemes to make recycling easier and more efficient for those who do not live close to recycling facilities.

The Household Waste Recycling Act 2003 obliges waste collection authorities in England to ensure that at least two types of recyclable waste are collected separately from the rest of the household waste. This Act does not include the same provisions for Wales. Friends of the Earth Cymru calls on the National Assembly for Wales to guarantee the same commitment to kerbside collections in Wales.

Action point: the Assembly should set targets for Wales-wide household kerbside collections

Landfill and incineration taxes and tax credits for recycling

The gradual increase of the landfill tax contributes to the diversion of waste from landfill. Friends of the Earth Cymru supports a high landfill tax and a higher gradual increase per year. However, there is a real danger that local authorities will divert waste from landfill to incineration sites to decrease payment of landfill tax. Therefore, Friends of the Earth Cymru would welcome the introduction of an incineration tax to discourage the diversion of waste from landfill to incineration and to encourage recycling and composting instead.

Tax credits to encourage recycling should be considered by the UK government as well. These may include a tax credit for purchase of equipment making products with a certain

Zero waste in Wales

percentage of recycled content. This would encourage businesses to use recycled materials for production rather than new resources [12].

Action point: the UK government should introduce a tax on the incineration of waste as well as tax credits for effective recycling

Setting charges according to environmental impacts

The survey conducted by the Environment Agency also revealed that there is little support for charging people according to how much waste they produce (58 per cent disagree to such an idea). However, the same percentage would support a charge according to the amount of unsorted rubbish if containers were provided by local councils. “Pay as you Throw” schemes, such as those operating in several local councils in New Zealand [13], could be an effective model to create financial incentives for recycling. If consumers did not separate and sort their rubbish in spite of good kerbside recycling schemes being available, variable charges would be legitimate. Likewise, if businesses did not make sure that their waste is disposed of in an environmentally friendly way, the same principle should apply: the waste generator has to pay the cost of disposal according to its environmental impact. Such a scheme would have to be accompanied by effective measures to prevent and penalize “fly-tipping”, i.e. the illegal dumping of rubbish which is harmful to the environment, people and wildlife.

Likewise, those people and businesses who actually make use of recycling facilities and schemes should be rewarded for their efforts, e.g. getting free recycling bags and bins for those taking part in recycling schemes and getting free compost for those taking part in composting schemes.

Action point: the UK government and National Assembly for Wales should investigate charges and rewards according to participation in recycling schemes

Towards sustainable development: Zero-waste creates a sustainable industry

With an increasing world population and increasing consumption levels as well as diminishing natural resources, the need for sustainable resource management will become more and more crucial in the near future.

Sustainable waste management will not just be good for the environment. A zero-waste policy would form the basis of a sustainable industry which could create business and

employment opportunities for communities throughout Wales. According to the then Welsh Assembly Environment Minister Sue Essex, the waste and recycling industry could potentially create 6,000 extra jobs in resource management processes (collection, sorting and reprocessing) [14]. Collection includes: kerbside, bring/drop off sites and civic amenity sites; reprocessing includes: paper/card, glass, steel, aluminium, plastic and compost. In Germany, ca. 150,000 people are employed in the waste and recycling industry [15]. Zero-waste also provides employment opportunities in administration. The Wales community recycling network, Cylch, estimates that a zero-waste policy would create nine thousand jobs across Wales within five years [16]. Re-use, recycling and composting industries could be developed throughout the nation, reducing our reliance on inward investment.

Zero-waste also resembles a social process: non participation in recycling and composting will become more and more socially unacceptable. According to the Welsh Consumer Council, peer pressure will increasingly lead to the stigmatisation of non-recyclers [17].

Action point: the Assembly should gradually implement a zero-waste policy over 25 years

Zero-waste as a grass-roots movement

What can be done when the government is slow in setting regulations and creating the conditions for effective recycling (e.g. providing doorstep collections)? Local councils, businesses and grass-roots movements will have to be ahead of government and take the lead to ensure a sustainable and effective resource management beyond the legislative term. Warren Snow from the Zero-waste New Zealand Trust regards zero-waste as a people-led movement in which the Government followed [18].

According to the Zero-waste New Zealand Trust, the zero-waste industrial system emphasizes local and regional distribution of resources and products [19]. Therefore, zero-waste policy will be the most effective at the local level where it is backed by consumers, businesses and local authorities. New Zealand is a good example of the influence exercised from the grass-roots level on the government: a large proportion of New Zealand's local authorities have already set zero-waste targets by between 2015 and 2020. Influenced by the Zero-waste Movement in New Zealand, the government published its new waste strategy paper which recognizes zero-waste as the long-term aim [20].

Action point: local authorities and community groups in Wales should start local zero-waste initiatives and implement zero-waste at the grass roots

Friends of the Earth Cymru's recommendations

Zero-waste requires the Welsh Assembly to be fully committed to its implementation. Friends of the Earth Cymru wants the Assembly to impose a ten year moratorium on the installation of incinerators throughout Wales. This would give local communities time to develop re-use, recycling and composting schemes without competing with incinerator companies for waste. If zero-waste is allowed to develop incinerators could be obsolete within ten years.

Unfortunately, many local authorities see incineration as the solution to reducing the amount of waste being landfilled. In the long term, Friends of the Earth Cymru wants local authorities to be subject to statutory targets, set by the Assembly, for recycling and composting. To ensure targets are met, the National Assembly should provide funding to the local authorities so they can successfully carry out their objectives. Currently, Assembly funding for local authority recycling schemes is much higher than it was before devolution. This is very welcome and must be continued. Additionally, the Assembly should guarantee kerbside collections of recyclable materials for each household in Wales.

Zero-waste policy is attainable: Canberra, Toronto, California and New Zealand have set zero-waste targets to be reached by 2020 or earlier. Bath and North East Somerset local council has been the first local council in Britain to adopt a zero-waste strategy and others have followed this example. With a full commitment to zero-waste policies, the Assembly can transform Wales from being a waste management embarrassment to the EU's example of sustainable resource management. Local authorities, businesses and people should implement zero-waste at the grass roots level to ensure that they will benefit from the long-term advantages provided by sustainable resource management.

Friends of the Earth Cymru recommends that the UK government introduce measures to encourage recycling and composting and discourage landfilling and incineration of waste. This could include an incineration tax, tax incentives for effective recycling as well as charges for non-recyclers and rewards for high levels of participation in recycling schemes.

A colourful A5 leaflet which gives a straight forward introduction to the issue of waste in Wales and what you can do to help is available free from Friends of the Earth Cymru. Available free by post or download via our web site.

Definitions

Waste: Assembly defines waste as solid and liquid waste other than those discharged directly into the atmosphere or water.

Landfill: areas of land (usually disused mines or quarries) where waste is deposited.

Incinerator: used for the controlled burning of waste.

Pyrolysis: thermal degradation of waste to produce char (or ash), pyrolysis oil and synthetic gas (called syngas), e.g. the conversion of wood to charcoal.

Gasification: breakdown of hydrocarbons into a syngas using a controlled amount of oxygen, e.g. the conversion of coal into town gas.

Re-use: products that can be used a number of times. Process can save raw materials, transport and energy costs.

Recycling: collection and separation of materials from waste and subsequent processing to produce marketable products.

Composting: controlled biological decomposition and stabilisation of garden and kitchen waste.

Endnotes

- [1] Sources: Wales figure – Friends of the Earth Cymru calculations from local authority figures 2002/03, England figure - Defra 2001/02, Other figures - Environmental Signals 2002 – European Environment Agency, Resource Recovery Forum Warmer Bulletin
- [2] Baker, L., R. Capouya, C. Cenci, R. Crooks and R. Hwang (1990), *The Landfill Testing Program: Data Analysis and Evaluation Guidelines*. California Air Resources Board: Sacramento.
- [3] see Fielder, H.M.P., C.M. Poon-King, D. Fone, S. Monaghan and S.R. Palmer (1997), *Report on the health of residents living near the Nant-Y Gwyddon landfill site using routinely available data*. Welsh Combined Centres for Public Health: Cardiff.
- [4] see for example State of New York Department of Health (1998), *Investigation of Cancer Incidence and residence near 38 landfills with soil gas migration conditions, New York State, 1980-1989*. Agency for Toxic Substances and Disease Registry: Atlanta; see also press release on <http://www.health.state.ny.us/nysdoh/commish/98/landfill.htm>.
- [5] A summary of the survey can be accessed on http://www.wales-consumer.org.uk/englishsite/press_pubs/publications/waste_not/summary.htm.
- [6] For example, an aluminium mining company in Ghana destroyed a large natural habitat to build a dam with a lake half the size of Wales; see for example Akabzaa, T. and Abdulai Darimani (2001), 'Impact of Mining Sector Investment in Ghana: A Study of the Tarkwa Mining Region', available on <http://www.natural-resources.org/minerals/africa/docs/pdfs/Impact%20of%20Mining%20Sector%20Investment%20in%20Ghana.pdf>.
- [7] A study into Incineration and Human Health, conducted by the University of Exeter (March 2001), can be accessed on <http://archive.greenpeace.org/~toxics/reports/euincin.pdf>.
- [8] The process as well as its benefits and disadvantages are discussed in a Friends of the Earth briefing on that issue: 'Pyrolysis and gasification', October 2002, available on http://www.foe.co.uk/resource/briefings/gasification_pyrolysis.pdf.
- [9] The Waste Incineration (England and Wales) Regulations 2002 SI 2002 No. 2980, which implement the EU Directive on the incineration of waste, take the Directive definition verbatim, i.e. "incineration plant' means any stationary or mobile technical unit and equipment dedicated to the thermal treatment of wastes with or without recovery of the combustion heat generated. This includes the incineration by oxidation of waste as well as other thermal treatment processes such as pyrolysis, gasification or plasma processes in so far as the substances resulting from the treatment are subsequently incinerated."
- [10] Currently, oil and natural gas based hydrocarbons dominate as feedstock for petro-chemicals industries.

Zero waste in Wales

- [11] see Environment Agency Household Waste Survey 2002, accessible on http://www.environment-agency.gov.uk/commondta/105385/waste_1.pdf
- [12] Tax incentives for recycling exist, for example, in several states in the US.
- [13] Zero-waste New Zealand Trust (2000), *Local Authority Waste Reduction and Management Practices in New Zealand, Survey Report*.
- [14] see the *Waste Awareness Wales* supplement in *The Western Mail* (February 2003)
- [15] Murray, R. (1999), *Creating Wealth from Waste*, Demos: London.
- [16] 'Wales Urged to Adopt Zero-waste Strategy', press release (July 4 2001), accessed on pressbox.co.uk.
- [17] see the summary of the report *Waste not, want not* on http://www.wales-consumer.org.uk/englishsite/press_pubs/publications/waste_not/summary.htm.
- [18] see *The Guardian*, July 17 2002.
- [19] see Zero-waste New Zealand Trust, *The End of Waste: Zero-waste by 2020*.
- [20] Ministry for the Environment (2002), *The New Zealand Waste Strategy: Towards zero-waste and a sustainable New Zealand*.