



FRIENDS OF
THE EARTH
SCOTLAND

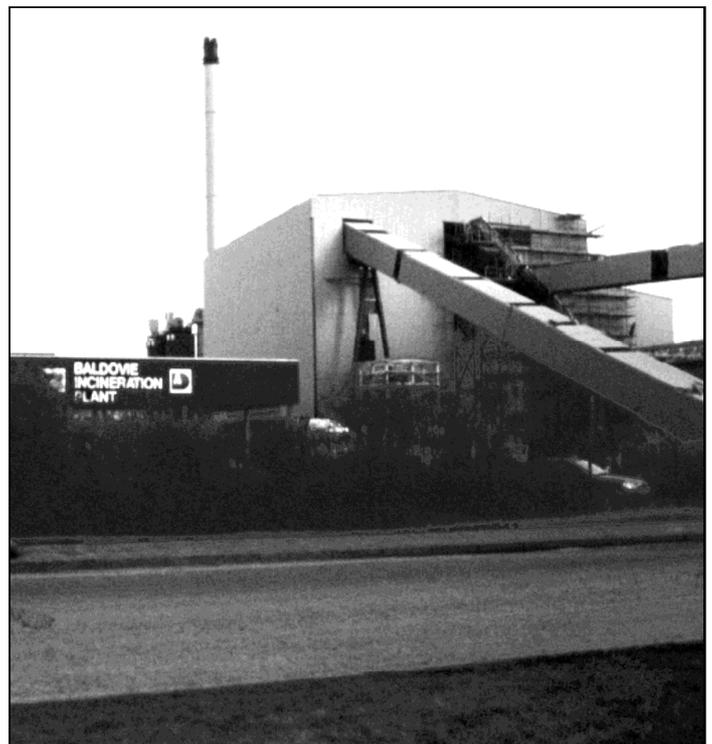
INCINERATION OR SOMETHING SENSIBLE ?

A Briefing from Friends of the Earth Scotland

The UK Government and local authorities are currently looking at burning more waste from households, shops and offices in incinerators. This would mean literally sending valuable resources up in smoke, as well as increasing pollution levels and losing the chance to increase employment.

Most proposed new incinerators would be equipped to generate electricity from the heat produced by burning the waste. Some of them would also use some heat directly to heat buildings. Hence they are not being called 'incinerators', a word which people associate with pollution problems, but 'waste-to-energy' or 'energy-from-waste' facilities.

In recent years, most of our waste has been landfilled (that is, buried in huge holes in the ground, for instance in old quarries). Last year in Scotland 93% of household waste went to landfill. Local authorities are now being forced to consider alternatives, however, as in many areas there are few suitable landfill sites now still available. In addition, EU directives require the government to reduce the dumping of bio-degradable waste such as food scraps and newspapers, by 25% by 2010 and progressively to 65% by 2020.



FoE Scotland are concerned that in looking for new alternatives, authorities should not turn to giant incinerators but should instead work on setting up sustainable waste reduction, recycling and composting initiatives.

The Scottish Environment Protection Agency (SEPA) has produced a National Waste Strategy for Scotland. It is currently being put into effect through the development of 11 Area Waste Plans for the whole of Scotland. These plans present a number of options, including incineration. In the two areas where final draft plans have been produced, the option of incineration was not picked.

“Mass burn incineration should not be considered a replacement for landfill. We do not want to move from one form of dependency to another. We need to be more innovative than that.

“Of the two draft plans to be produced to date – Forth Valley and Argyll & Bute – I was pleased to see that both had opted for options heavily focused on recycling and composting to enable the shift away from landfill. “

Rhona Brankin, Deputy Environment Minister, NSCA Conference, Glasgow, 19 September 2001

There are only two municipal waste incinerators running in Scotland: a small one in Lerwick and a full size facility at Baldovie in Dundee. Last year less than 2% of Scottish household waste was used for the recovery of heat or power, but a number of new large mass-burn incinerators are being proposed including ones in Inverness, Aberdeen, N. Lanarkshire and Newton Stewart.

FoE believes that no new large incinerators are needed and, as waste groups compile their strategies, this briefing shows that neither burning waste nor burying it is the answer - instead, we need to be recycling and composting materials, and finding ways to produce less waste in the first place.

Superficially, the idea of burning waste to generate useful energy sounds environmentally sensible, and this is certainly how the new incinerators are being marketed by their operators. Friends of the Earth, however, opposes the incineration of waste (including incineration with energy recovery) for three main reasons:

- incineration wastes valuable resources
- incineration pollutes
- incineration is bad for climate change

This briefing looks at these reasons in depth, at some of the financial and employment implications, and at Friends of the Earth's recommendations as to the way forward. At the back you will find a 'Jargon Buster' to help you get to grips with some of the specialist terminology of the waste industry.

INCINERATION WASTES VALUABLE RESOURCES

Waste or resource ?

We still live in a throwaway society. In Scotland we throw away 16 million tonnes of waste every year, 2 million tonnes of which is household/domestic waste. It has been estimated that for every tonne of 'product' that we buy, ten tonnes of resources have been used to manufacture them. Although we call the materials we throw away 'waste', this is a misnomer - most of it either does not need to be produced in the first place, or could be reused or recycled as a useful resource.

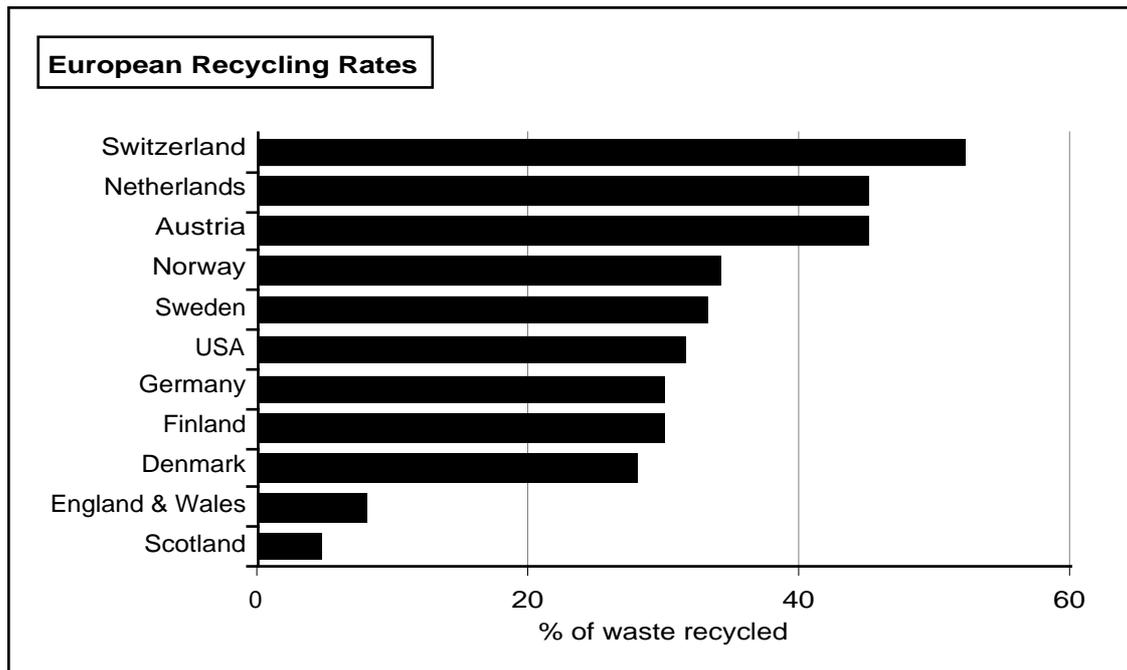
Scotland produces 2 million tonnes of domestic waste per annum. Although at present up to 80 per cent of the household waste stream may be recyclable, last year (1999/2000) only 6.6% was actually recycled.

All Scottish councils failed to meet the previous Government target of 25% recycling by the year 2000. Six councils reported recycling more than 10% of household waste – two more than last year, with Orkney Islands the highest with slightly over 20% recycled. Thirteen councils, the same as the previous year, reported recycling less than 4%. Nine councils reported facilities for composting household green garden waste at central locations within their area.

In England there are now mandatory waste targets: to recycle or compost 25% of household waste by 2005, 30% by 2010, and 33% by 2015. In Scotland we have no national targets as yet. SEPA are currently considering what sort of targets to set and how to set them. Without a change in the law, they can only set voluntary targets.

It is very important that instead of wasting resources we use them more efficiently. FoE Scotland wants cuts in resource use of 80-90 per cent by 2050. This is not because resources are about to run out in the near future, but because of the effects of the current fast rate of consumption. FoE are not the only ones calling for cuts. The House of Commons

Environment Committee has said that we need a "revolution in resource use" and that we may need to reduce resource use to 10 per cent of current levels. Even the Government's Sustainable Development Strategy says that "continued improvements in resource efficiency are essential for the UK's future prosperity and competitiveness"



On paper and timber use, the last 5% of old forest in Scandinavia is still being cut down to provide paper for us to use and the loggers have now moved into wildlife rich forests in Russia. These forests are the remaining home to a rich variety of plants and animals, including the flying squirrel, the brown bear, and the white-backed woodpecker. In Sweden alone, over 1700 forest-dwelling species are on the national threatened species list.

On aluminium, a mine in Ghana, which provides 1% of the world's aluminium, is powered by a hydroelectric project. An artificial lake half the size of Wales has been built to do this, displacing 80,000 people. Pollution from the Ok Tedi copper and gold mine in New Guinea has contaminated local seafood, and is now considered to have destroyed the ecosystem on which 30,000 people depended for their livelihoods.

Preventing these kinds of impacts means making things last twice as long and using half as much, doing much more with far less. Wasting much less and recycling much more is an important place to start.

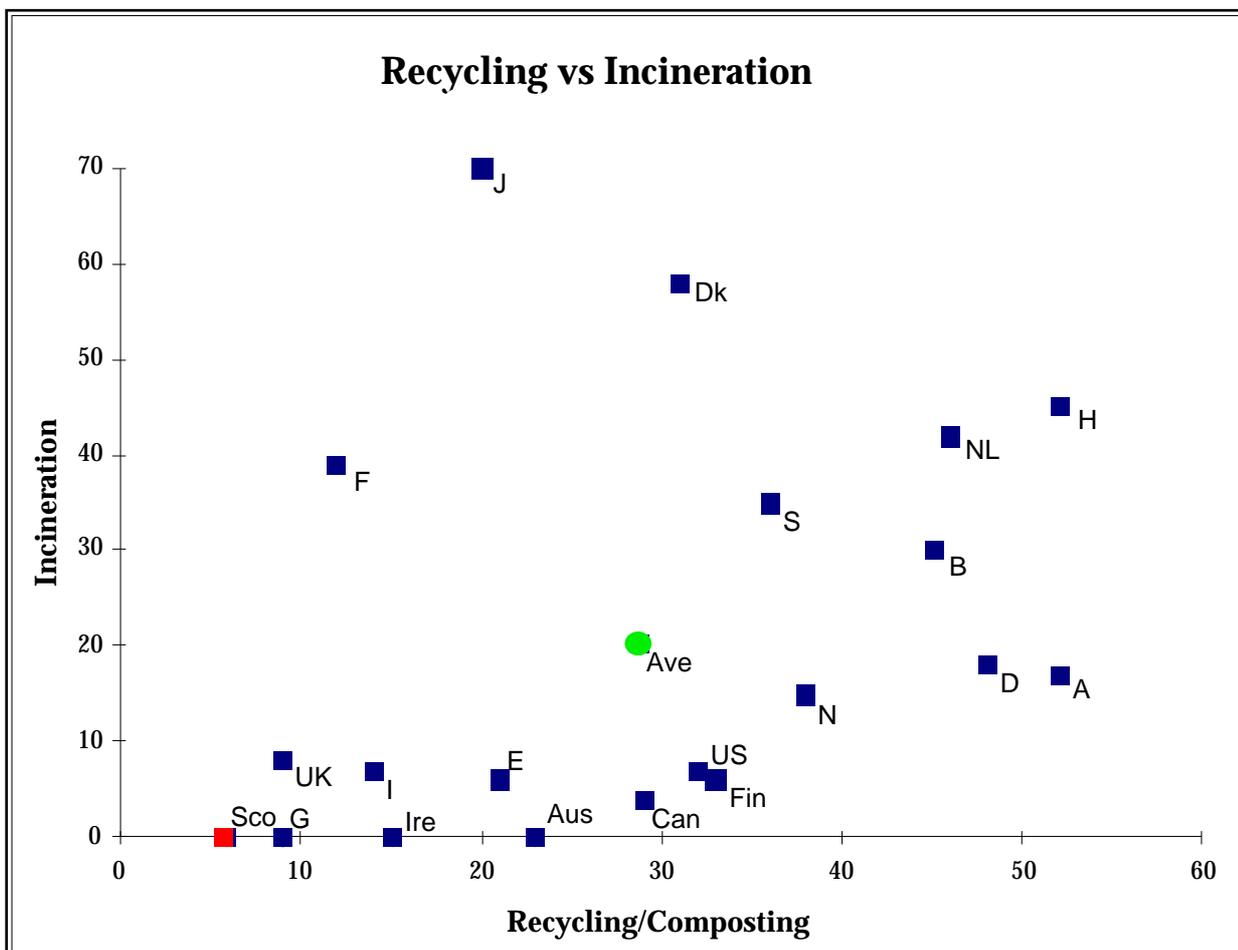
Incineration and recycling - are they compatible ?

If we build incinerators, we are not only sending resources up in smoke, but also accepting that we do not need to reduce wastage. Because building an incinerator has such high capital costs, incinerator operators typically require contracts with local authorities to supply them with a minimum amount of waste to burn over a long time - 25 to 30 years. In some cases, if the local authority does not supply the full amount of waste required, it has to pay the incinerator operator to compensate for their profit shortfall. This assurance of return on investment is a logical requirement from the incinerator operators' point of view, but once incineration is established as an area's mode of waste management, it hampers waste reduction and recycling measures. The incentive on the local authority will be to ensure enough waste is produced, not to ensure that it is reduced.

An example of this has occurred in Cleveland. In mid-1995 Cleveland County Council (now re-organised into unitary authorities) signed a contract with a waste company to supply at least

180,000 tonnes of waste for incineration and 80,000 tonnes for landfill each year. There was a 'shortfall' of 12,000 tonnes in the first year of the contract, and the authorities incurred penalties of £147,000. The Associate Director of Environmental Services at Stockton Borough Council has said “essentially we are into waste maximisation”, and that they are constrained by the contracts from doing even a modest amount of recycling.

Another example is Aberdeen City Council who signed a 25-year contract with Northumbrian Environmental Management, a subsidiary of the French waste company, SITA. Although the contract includes some recycling, its major component is to be a new incinerator. The company have suggested their incinerator might burn 160,000 tonnes of waste a year, which is more rubbish than all the shops, businesses and homes in Aberdeen actually produce at the moment. SITA claim that the amount of waste in the area is growing by 3% a year and so such a huge incinerator is necessary. This stance however is at odds with Aberdeen City Council’s commitment to “reducing the amount of household waste being generated by 1% a year ... and to achieving a minimum of 25% recycling and composting by 2005,” and also with SEPA’s estimate that waste is growing at less than 2% a year.



The incineration industry and the Government argue that incineration and recycling can exist side by side. Some incinerators have facilities for removing glass and metals. But if paper and plastic waste were minimised and recycled as much as possible, in most areas there would not be enough left to make incineration financially worthwhile. If there is less waste, a smaller incinerator is required. However, the costs of some pollution control equipment are the same irrespective of the size of the plant to which they are fitted, and can be a high proportion of the costs of a small incinerator, potentially making small incinerators uneconomic.

“Going down the route of incineration does absolutely nothing to encourage responsible attitudes to waste; it does not encourage people to minimise waste, reuse or recycle. Indeed, incineration could offer an incentive to do the reverse.”

Nora Radcliffe MSP (LibDem, Gordon)

Similarly, although it might appear that incinerators would not affect recycling of metals and glass, in practice there would be little incentive for separating out these materials, since they can go through the incineration process. This makes recovery of uncontaminated materials difficult.

In Scotland we face a choice between incineration or high levels of composting and recycling. If we go down the incineration route we are likely to stay at the bottom of the European recycling league for decades to come (see figure on previous page).

“The Executive recognises and addresses people’s concerns about energy-from-waste. Last month I announced the statutory consultation on the Renewables Obligation (Scotland). In response to an initial consultation, the Executive decided against supporting the conventional incineration of municipal waste under RoS. It is proposed that new, cleaner technologies such as gasification and pyrolysis will be supported where these fit in as part of an integrated waste management system. In other words, this means thermal treatment only of the residues left once separation, recycling and composting has been carried out first.”

Rhona Brankin, Deputy Environment Minister, NSCA Conference, Glasgow, 19 September 2001

Energy from recycling, not energy from waste

By recycling instead of producing goods from raw materials, substantial amounts of energy can be saved. Recycling cuts out the energy consumption associated with the extraction and initial processing of raw materials. The recycling process itself is often more energy efficient than production from raw materials. Energy can be obtained from incineration, but this is usually less than can be saved by recycling or reuse. The European waste strategy assumes that, in general, recycling is preferable to incineration in energy terms.

A Canadian study found the following figures for energy saved by recycling materials as opposed to burning them. The savings still apply when the energy used to transport materials for recycling is taken into account - this energy is relatively insignificant.

Material	Energy saved
Paper	3 times
Plastic	5 times
Textile	6 times
Food and garden waste	none

Studies on individual materials yield similar results. In ten out of eleven analyses on paper, recycling has been found to result in lower total energy use than incineration. The most recent report looking at greenhouse gas emissions from different waste treatment options for different materials found that recycling is preferable for paper, cardboard, plastics and metals. Interestingly it also suggested that landfill is better than incineration for plastics and some papers (for example newspaper) because the carbon is trapped in the landfill rather than released in the environment. And a study by the British Plastics Federation has found that recycling of plastic cups is preferable to incineration in energy terms.

INCINERATION POLLUTES

Incinerators emit substances such as dioxins, heavy metals (e.g. cadmium and mercury), dust particles and acid gases such as sulphur dioxide and hydrochloric acid. In May this year, a study in the medical journal the Lancet found that pollution from incinerators could be affecting sexual development in children. According to the study, teenagers living near incinerators had smaller sexual organs than those in rural areas. The teenagers' bodies contained high levels of toxic chemicals, which are thought to interfere with sexual development and are already linked to cancer, heart disease, allergies and breathing illnesses.

In 1999 and 2000, 10 incineration plants across the UK exceeded pollution limits a total of 553 times. No other industry could get away with such poor performance. Whilst being recommissioned after a fire, Scotland's largest incinerator in Dundee breached its safety limits 19 times during April, May and June, resulting in the unauthorised release of pollution.

"I accept that new incinerators must meet strict emission standards, but in real life things have a habit of going wrong."

"If councils opt for waste incineration, they will put the health of their communities at risk. They should aim for waste reduction, recycling and composting."

Irene McGugan MSP (SNP, North East Scotland)

Air pollution

The new generation of incinerators operate to much tighter standards than those of the 1970s and 80s and new European legislation will tighten these standards further. However, other countries are already operating to higher standards. For example, standards for dioxin emissions in the Netherlands are ten times more stringent than the new UK standards.

Monitoring for dioxins (and also for heavy metals) is usually done at intervals - for example, twice a year. The amount of each pollutant will vary depending on the particular composition of the material going into the incinerator at any given time and the temperature of the incinerator. To achieve the most favourable results it is likely that the operators will ensure that ideal conditions are prevailing at the times of the tests. This may not always be the case at other times the incinerator is operating.

Incinerator Emissions

Dioxins - a by-product of burning chlorine-containing materials, such as PVC plastic. Dioxins are extremely toxic. They are persistent - that is, they take a very long time to break down, either in the body or in the environment. They are bioaccumulative - that is, they build up in people's bodies, and in the food chain, over time.

There has been considerable debate over just how much risk to health dioxins pose. However, everyone is now unavoidably carrying a certain amount of dioxin in their bodies as a consequence of living in the industrialised world. Some of the health effects associated with dioxins are seen in people with levels of dioxin not much higher than the amount many people have anyway. This does not prove that the dioxin is definitely causing the health effects, but it should not be necessary to wait for definite proof - the 'precautionary principle' should be applied and no more avoidable dioxins should be added to the environment.

The UK Government considers that there is very little health risk from current levels of dioxins, based on a particular 'tolerable daily intake' (TDI). The UK's TDI is about 100 times less stringent than the US Environment Protection Agency considers to be safe for non-cancer health risks (such as reduced fertility, and endometriosis), and about a 1000 times less stringent than they calculate to give a cancer risk of one in a million (their usual benchmark).

Heavy metals - cadmium may cause lung and kidney disease, and mercury can affect the nervous system, while all heavy metals are toxic to humans and wildlife.

Dust particles - these exacerbate lung diseases such as asthma or chronic bronchitis, and also heart disease.

Acid gases - these also exacerbate lung disease and contribute to acid rain.

Carbon monoxide (CO) - not dangerous as an incinerator emission, but a sure sign that the plant is not burning waste efficiently.

Incinerator ash

One of the main arguments put forward for incineration is that it saves on landfill space - but a significant amount of ash is produced. When waste is landfilled it is compacted. According to Government figures, the ash produced by incineration occupies 40%-50% of the space that compacted unburnt waste would. Therefore, whilst it is often said that the ash occupies only 10% of the volume of unburnt waste, this figure is misleading as it applies to uncompacted waste.

The ash is toxic; the toxins include heavy metals and dioxins. This particularly applies to ash which is 'caught' by pollution control equipment and prevented from going up the chimney. This is known as 'fly ash' and must be sent to special landfill sites for disposal. However, the main volume of the ash - 'bottom ash' - also contains toxins. Most of it goes to landfill, and this means that the pollutants may eventually leak into ground water, from where it is virtually impossible to clean them up. Moreover, the heavy metals are present in ash in a form that renders them more liable to leach than from unburnt waste. The process of incineration also creates dioxins which are not in the waste to start with.

Incineration companies are now using bottom ash for construction purposes in roads and housing breeze blocks. This does not however solve the problem of what to do with the toxic fly ash. There have also been several recent scandals where this hazardous waste has been mixed with the less toxic bottom ash and used for road building or on public allotments.

"Given that we have been able to land men on the moon for the past 30 years, it should not be beyond us to recycle our reusable products such as paper, plastic, glass, textiles, metals and compost materials."

John Scott MSP (Conservative, Ayr)

Regulation Fails the Public

Opened in 1979 Dundee's Baldovie incinerator was faced the prospect of closure at the end of 1996, as a result of new European laws which would impose tougher pollutions on big incinerators.

In February 1994 tests showed levels of particulates 2 or 3 times above the limits set down by Her Majesty's Industrial Pollution Inspectorate (HMIPI). Although no standards were set for dioxins, the levels were high, 35 times higher than today's standards. Dundee Council had their own tests performed in December 1994, which also showed some breaches of the particulates standard and high dioxin levels.

HMIPI did little until further tests were carried out in January 1995. The results showed that the incinerator was putting out even more pollution, with hydrogen chloride and particulates well over the limits, and dioxins 6 times higher than the year before.

Finally in July 1995 HMIPI took action over an incident in which heavy black smoke was emitted in June, but it failed to take any general action over the poor performance of the plant.

HMIPI commissioned further tests in September 1995, which showed particulates at nearly four times the allowed limit, as well as breaches for other pollutants. Again HMIPI failed to do more than write to Dundee Council and ask what action was being taken to correct matters. The incinerator was allowed to operate right up to the December 1996 deadline.

It is likely that the Baldovie incinerator operated in breach of its legal limits for most of its last three years of operation, but HMIPI failed to take any meaningful action to protect the public and the environment.

A health study, based on health effects found near a French incinerator, has been launched in Dundee. This may reveal some of the cost of HMIPI's failure to act.

LOCAL EFFECTS OF INCINERATORS

An incinerator has impacts other than local pollution on the community where it is sited. Traffic congestion, pollution and noise arise from the lorries transporting waste to, and ash away from, the incinerator. Incinerators themselves are ugly, and property values and local businesses (such as food processing, which needs to maintain confidence that its products are not contaminated) may be adversely affected.

Incinerator Costs

It is not surprising that, at present, incineration appears to be a financially attractive option for waste authorities which are hard pressed for landfill space because at present, incineration may appear to be a cheaper option than recycling. However, incinerators could end up being expensive white elephants for four reasons.

As emissions standards continue to improve, costs will increase. A study has estimated that the cost of upgrading plants which already comply with the current law to comply with the new EU standard may be around £8 per tonne of waste.

Incinerator operators may in the future find themselves liable for large litigation claims from local residents whose health has been damaged by the emissions. The landfill tax may be increased, and extended to incineration, so that the environmental costs of these waste disposal options are more fully reflected in the price paid for them.

"One tonne of mixed municipal waste that is sent to an incinerator—some of it landfilled and some burned—will produce £27-worth of electricity. One tonne of mixed municipal waste that is recycled will produce up to £720-worth of reusable goods"

Robin Harper MSP (Green, Lothians)

At present, many incinerators are subsidised by the Government through the Non-Fossil-Fuel-Obligation and the Scottish Renewables Obligation. The Government's latest scheme to support renewable energy specifically excludes incineration.

Investment in recycling, on the other hand, will pay off more and more as recycling infrastructures and markets for recycled materials develop. It also creates far more jobs than either landfill or incineration - see below.

Waste management and employment

Once they have been built, incinerators create few jobs compared with recycling. A New York study found the following:

Jobs per one million tons of waste processed	
Type of waste disposal	Number of Jobs
Landfill	40-60
Incineration	100-290
Composting	200-300
Recycling	400-590

The British Newspaper Manufacturers Association found that the recycling of newspapers would create three times as many jobs as incinerating them. In addition, a higher proportion of the jobs created by incineration were associated with building the incinerator, so they were not permanent jobs.

The process of recycling is carried out by a variety of different industries and employers, and as a result it is difficult to calculate exactly how many jobs are involved. What is clear, however,

is that it is a waste management option that is labour intensive, creates permanent jobs and has the potential to create more. The following table shows the breakdown of jobs in collection, sorting and reprocessing of household materials for recycling.

STAGE OF PROCESS		JOBS
Collecting Waste		5450
Sorting Waste		1624
Reprocessing -	paper/card	9400
	glass	160
	steel	60
	aluminium	75
	plastic	70
Community Sector		500
TOTAL		17339

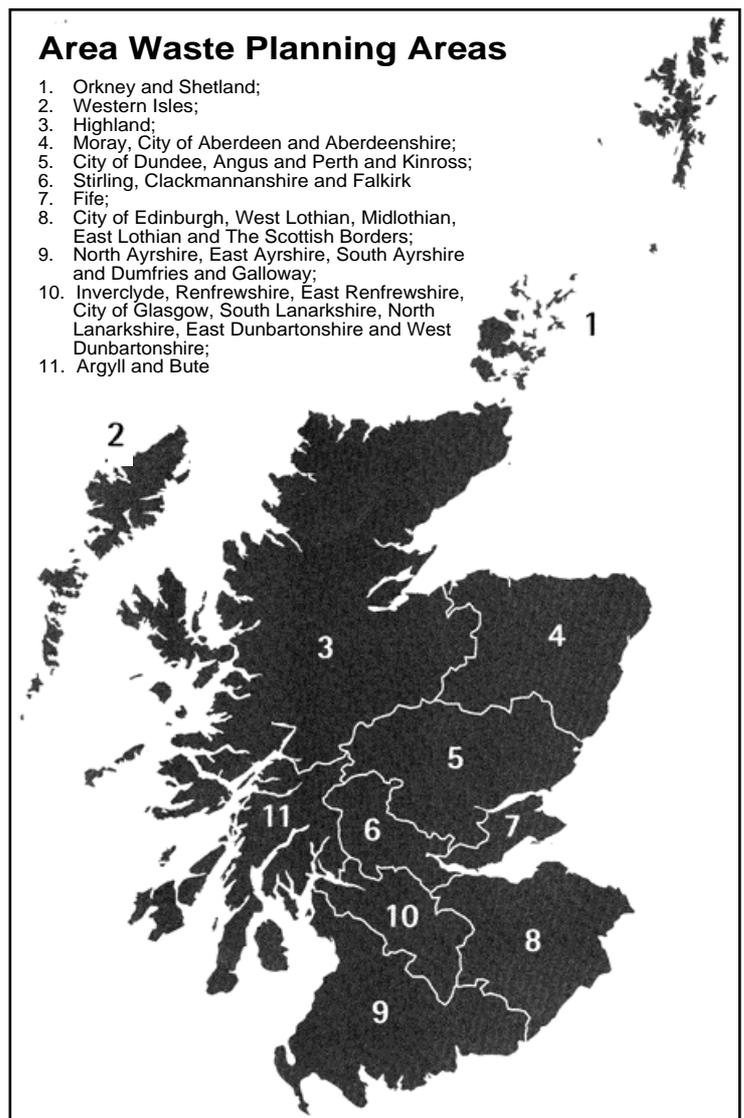
Current jobs involving recycling in Great Britain (1997).

The government has estimated that a total of 45,000 skilled and unskilled jobs could be created by meeting a 30% recycling target by 2010. A strategy drawn up for London suggested that increasing recycling in London to around 50% by 2005 would create around 15,000 jobs.

Is all EfW bad ?

Energy from waste (EfW) is a term which covers more than just large incinerators. Collecting and making electricity from the gas which comes of old landfill sites counts as energy from waste, and certainly makes sense. The two leading non-burn technologies which are being developed are pyrolysis and gasification. Both of these involve heating the waste and burning the gases which are given off to make energy. Because the waste itself is not burnt the risk of forming dioxins is greatly reduced and pilot plants around the world show much lower emissions than even modern incinerators. Large-scale pyrolysis plants are in operation in Japan and two 30,000 tonne a year plants are planned for Dumfries. A second advantage of these plants is that they can be built on a small scale, letting them deal with the residue of recycling processes rather than just replacing landfill as the main disposal option. Having said that, the Highland Area Waste Plan considers a very large pyrolysis plant as one option.

The Government's new support mechanism for renewable energy, the Renewables Obligation Scotland, specifically excludes large incinerators but includes gasification and pyrolysis.



Local Area Waste Strategies - Success and Failure

The Area Waste Plans which are to deliver the National Waste Strategy at a local level, are coming up with some very interesting options that could help all of Scotland avoid the need for any more incinerators.

Friends of the Earth Scotland believes that the first of Scotland's area waste plans, the Forth Valley Area plan, sets a good example that the others should follow. The use of mass burn incineration is rejected in favour of increased recycling and composting.

The report from the Forth Valley Waste Strategy Area Group (consisting of SEPA, Falkirk, Clackmannanshire and Stirling Councils, Scottish Enterprise Forth Valley, East of Scotland Water and the Scottish Waste Awareness Group (SWAG)) sets out how to deal with rubbish in the area for the next 20 years.

It has set a target of 25% recycling and composting by 2006 and 30% by 2010. The plan also rejects mass burn incineration and will review the need for a small-scale advanced thermal (non-burning) processes such as gasification and pyrolysis in 2006. According to the report the Group believes that the plan "offers the best combination of cost, employment generation, environmental impact and public acceptability."

"In Stirling ... it is clear ... that the people say yes to recycling, yes to composting, yes to minimising waste and no to mass-burn incineration."

Dr Sylvia Jackson MSP (Labour, Stirling)

In the Highlands 5 options have been developed and ranked in terms of environmental performance. There is an incineration option but the one which scores best would deliver 42% recycling and composting through a network of local composting facilities. All options cost around the same so the high recycling option is clearly the best all round choice. Argyll and Bute was the second area to produce a draft Plan and again they do not opt for an incinerator.

There is no good reason why the approach adopted in the Forth Valley plan cannot be used throughout Scotland's central belt - 30% recycling and composting by 2010 and no incineration. Similarly, the Highland recycling/composting option could be replicated in Scotland's other rural areas.

Unfortunately the Area Waste Plans have a key weakness - there is no compulsion on local authorities to actually take part. Whilst all of Scotland's 32 local authorities **are** sitting at the table in their area groups, some are more committed than others. In the North East area, Aberdeen City Council has already signed a deal with waste company SITA to build an incinerator by 2005, effectively making the discussion of an Area Waste Plan academic. In Highland, although there is a great option on the table, delivering very impressive rates of recycling and composting, it is very unlikely to be delivered because the Council is already at the final stages of a bidding process with the private sector which will see an incinerator or a large pyrolysis/gasification plant built near Inverness, with recycling and composting rates of around 7%. It does not matter what the public say in response to the consultation, and it does not matter what the other members of the Area Waste Group think, the Council has three bids to choose from - none of which offer high recycling and composting and all of which offer incineration or another EfW plant, because that is what Highland Council asked for. In Edinburgh a similar process is underway with the Council about to reveal what private companies are offering them, regardless of what the Area Waste Plan might say.

The Area Waste Planning process has been a sensible strategy but it was begun too late and its voluntary nature has been a serious handicap. Although the Forth Valley Plan and the good options in Highland have show the potential of the process to produce the right result, it is unlikely that many of the other plans will deliver such good results, and it is almost impossible now for Highland to select the sensible option.

WHAT DO WE WANT TO SEE ?

First, there are many ways of using materials far more efficiently than we do at present. And it is not just Friends of the Earth calling for this. The World Business Council for Sustainable Development has estimated that a ten fold increase in efficiency of material throughput is necessary. For example, we need to design products to carry out the same functions using fewer materials, and to be durable, repairable and have reusable parts. We need to make much greater use of recycled materials. We need to replace products with services (for example, nappy washing services and tool hire), and we need to start asking ourselves how much we really need. All of this would mean less in the dustbin.

Secondly, the waste we do produce needs to be recycled to a far greater extent than happens at present. It has been estimated that around 80% of household dustbin waste is recyclable or compostable; even this high level allows for practical and economic factors. Recycling saves materials by reducing the waste created in obtaining raw materials, saves energy, and most recycling processes are less polluting than raw materials processes.

In parts of the USA, Canada, Japan and Germany recycling levels of between 50-75% have already been achieved. It can be done here too - see the examples below.

Successful Local Authority Recycling Strategies

St Edmundsbury Borough Council (includes composting) has, over the last 10 years increased its recycling rate from 2% - 23.42%. With a population of 95,000 (58% located in towns) this increase has been achieved through a combination of house to house collections of green waste and paper and bring site recycling. After carrying out a waste composition analysis the council focussed on collecting the most effective materials from the waste stream - green waste (kitchen and garden waste and cardboard).

Dorset County Council (includes composting) a mainly rural area achieved a recycling rate of 26% in 1999/2000. This was achieved through a combination of kerbside collections and bring sites. Bring sites consisted both of large recycling centres in urban areas and smaller mini banks located at pubs and in urban areas.

Poole Borough Council (includes composting) a mix of urban and suburban population achieved a recycling rate of 26% in 1999/2000. In addition to kerbside collections and bring sites, the Borough of Poole also worked on a number of new initiatives which increased the profile of recycling and contributed to the overall recycling rate. Two such examples are a project working in partnership with the Aluminium Packaging Recycling Organisation on the recycling of aluminium foil by setting up recycling banks, and a project arranging the collection of old Yellow Pages during the months when new editions were issued.

London Borough of Sutton (includes composting) a southern London suburb achieved a recycling rate of 44% in 1999/2000 - and is well on its way to achieving the 50% target it has set itself for 2000/2001. This has been achieved by rolling out an already successfully trialled system. Households are supplied with 2 bins which are collected on alternate weeks - one for non-recyclable waste and one for recyclable waste. In addition the inspired Adopt-a-Bank scheme was set up so that community groups can agree to look after a bring site (keeping the area clean etc) and in return are paid £6.50 per tonne of paper and glass collected at their site - thus passing on some of the financial as well as environmental benefits of the recycling to the community. There are currently 140 community groups registered with the Adopt-a-Bank scheme.

CONCLUSION

Incineration is a backward-looking technology: it allows us to continue with our throwaway habits, instead of looking to the future, when we will be conserving resources much more carefully than we do now. It also adds to pollution of both air and land, and may turn out to be very expensive. Building incinerators now would commit us to this wasteful way of managing resources for decades to come.

We recommend the following steps towards more sustainable management of resources:

- The Scottish Executive should change the law relating to waste and resources, in particular:
 - work with SEPA to set challenging mandatory recycling targets for Scotland and for each local authority, and provide the resources to deliver these targets.
 - make the Area Waste Planning process a mandatory and binding process for local authorities
 - strengthen the role of Area Waste Plans in planning decisions
 - force producers to report on resource use and place on them a duty to reduce this use
- SEPA should:
 - provide public education on minimising waste and recycling more.
 - look at the potential for using Dundee's existing incinerator in a strategic way, by using it to burn only carefully selected wastes from around Scotland.
- Area Waste Plans should:
 - reject incineration as a backward-looking option, and instead expand recycling facilities, preferably by means of comprehensive kerbside collection, and look to composting and anaerobic digestion.
 - support waste exchanges, and reuse schemes such as furniture repair.
- Councils should:
 - minimise internal waste, and specify that materials purchased by the Council should be made from recycled materials.
- All of us should:
 - minimise the amount of waste we produce
 - re-use, recycle and compost as much as we can
 - buy products made from recycled materials

Don't let the future go up in smoke !

WASTE JARGON BUSTER (Adapted from the Highland Area Waste Plan consultation, with thanks to SEPA)

Controlled waste Household, commercial and industrial waste (not agricultural or mines and quarries).

Municipal waste Household/domestic waste plus commercial waste that a local authority is requested to collect.

Biodegradable Municipal Waste (BMW) That portion of municipal waste which biodegrades - eg kitchen scraps, paper and garden wastes. Approximately 60% of all municipal waste.

Recovery Includes composting, recycling and energy from waste.

Waste minimisation

Redesign Design of products by manufacturer to minimise the waste produced at the end of its life.

Reuse Using items e.g. containers, furniture again and again.

Repair/Refurbishment Fixing broken items, rather than throwing them away.

Collection

Refuse Collection Vehicles Bin lorries, also known as RCVs.

Mixed waste collection Collection, by an RCV of your unsorted waste - it is then difficult to separate for recycling.

Source segregation Separation of waste at source (ie by the householder or business) into waste that can be recycled and waste which cannot.

Kerbside collection Collection of your recyclable waste from containers that you place at your kerbside. Different combinations of systems exist - from two to five bins, bags or boxes.

Survival bags Bags that you put clean recyclable waste into, which survive the journey in the bin lorry so that the recyclables can be easily separated from the rest of your waste.

Bring sites Local sites with large banks for you to bring your recyclable waste to.

Civic amenity sites Local sites accepting waste which cannot be taken by RCVs. Most have recycling banks.

Special collections The Highland Council operates a special collection service free of charge, picking up bulky items, like sofas and fridges, direct from your house.

Transfer stations Sites where waste is bulked up for onward transportation in larger vehicles.

Recycling /Composting

Recyclate Waste material which can be recycled.

Recycling Processing of waste material to make new products.

Materials Recovery Facility (MRF) A plant where waste materials are sorted (by hand or mechanically) for recycling. A 'dirty' MRF deals with unsorted waste, as 'clean' MRF deals with pre-segregated waste.

Composting Biological degradation of organic waste in the presence of oxygen, to a point where it is stabilised. Anything which once was alive can be composted.

Home composting Composting of kitchen/garden waste at home in a small heap or bin.

Community composting Waste from a village or street is composted together - usually a voluntary initiative.

Centralised composting Composting at a large scale, where waste from a wide area is brought to one place.

Windrow composting Composting of large quantities of waste in a long heap, turned mechanically.

In-vessel composting Composting of waste in a sealed vessel which moves and aerates the waste.

Energy recovery

Incineration Thermal destruction of waste by heating it at temperatures of around 850°C, to give heat, exhaust gases, bottom ash and fly ash.

Bottom Ash Ash which falls through the grate of incinerator. The main residue from incineration - typically 30% of waste input. Usually landfilled or in some places used in construction.

Fly Ash Ash which is extracted from flue gases. As this is a means of pollution control, this ash is deemed 'special' - ie hazardous. Typically 4% of waste input.

Pyrolysis A non-burn technology involving heating waste in the absence of air at temperatures of 400-800°C to give a char and gases which can be used as a fuel to generate energy or heat.

Gasification A non-burn technology involving heating waste in the presence of oxygen at temperatures of 800-1400°C to give a char and gases which can be used as a fuel to generate energy and/or heat.

Anaerobic digestion Biological degradation of organic waste in the absence of oxygen in a sealed vessel at temperatures of 30-60°C, to give methane gas (fuel) and digestate (which can be soil conditioner).

Disposal

Landfill Disposal of waste into specially engineered cells in the ground. New sites are now required to have liner systems preventing leachate from escaping.

Leachate Liquid produced in landfill sites as waste decomposes. This liquid flows through the site combining with toxic elements such as heavy metals from batteries.

Landfill gas Gas given off when waste decomposes, rich in methane. Methane is a global warming gas, more powerful than CO₂ in contributing to the greenhouse effect.

Landfill permits A permit which a local authority can purchase or sell. The holder of the permit is allowed to landfill the amount of biodegradable municipal waste that is indicated on the permit. The amount of permits in circulation will be reduced over time, to meet the targets in the Landfill Directive.

Environmental Definitions

Acidification **Acid gases** (eg oxides of nitrogen or sulphur) are released and travel in the air. When it rains these molecules are washed out as 'acid rain' which effects animals and plants in forests and lakes.

Climate Change Global warming gases (eg carbon dioxide and methane) are released and enhance the natural greenhouse effect which traps heat in the earth's atmosphere. This makes the earth warmer, causing unpredictable changes to climate and sea level.

Non-renewable resources Materials like metals and oil are finite resources, which once destroyed cannot be recreated (unlike wood and paper, which are renewable resources if exploited sensibly).

CONTACTS

Communities Against Toxics

www.tcpublications.freeserve.co.uk

Composting Association

Avon House, Tithe Barn Road, Wellingborough, Northamptonshire, NN8 1DH,
membership@compost.org.uk

Recycling Advisory Group Scotland / Community Recycling Network Scotland

6th Floor, Scott House, 10 South St. Andrews Street, Edinburgh EH2 2AZ, 0131 557 8717,
ragsdesk@rags.org.uk, www.rags.org.uk

Scottish Environment Protection Agency (SEPA)

Erskine Court, Castle Business Park, STIRLING, FK9 4TR, 01786 457700, www.sepa.org.uk

Scottish Waste Awareness Group (SWAG) / Waste Aware Scotland

c/o Keep Scotland Beautiful, 7 Melville Terrace, Stirling FK8 2ND, nickis@tidybritain.org.uk,
www.wascot.org.uk

Waste and Resources Action Programme (WRAP)

The Old Academy, 21 Horse Fair, Banbury, Oxon, OX16 0AH, 01295 819900,
info@wrap.org.uk, www.wrap.org.uk

Waste Watch

96 Tooley Street, London SE1 2TH, 020 7089 2100, info@wastewatch.org.uk,
www.wastewatch.org.uk

FURTHER READING

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