

Waste policy – tidying up the mess we are in

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Out-of-sight and out-of-mind could be the motto of waste policy over the last few decades. We have dumped sewerage in our rivers and offshore, rubbish has gone to landfill sites, plastics into the sea and nuclear waste to storage sites. The results are all around us, from the Great Waste Gyration in the mid Pacific, to the micro plastics in Arctic birds; from the remaining landfill sites to the fly-tipping now so prevalent in the countryside.

There is nothing new in this. The streets of our cities were once literally dumping grounds, causing disease and epidemics, and some of our great rivers were treated as open sewers, all but biologically dead. The first white paper on nuclear waste disposal suggested dumping nuclear waste in deep-sea trenches and abandoned quarry shafts.

Policy advances have usually come *ex post*. As the problems mount and become politically intolerable, intervention tries to keep up. In a number of areas, it has just about worked. There are no more pea soup fogs, the Tyne and the Thames has witnessed even salmon coming back, and the bins are emptied.

It is widely acknowledged that this is not enough, and that more needs to be done. Air quality in our cities, the biodiversity problems in our rivers, fly-tipping, the continuing role of landfill, and the associated bin collection processes are but examples of the pressures which have been building up. It is a good time to have another go at an *ex post* attempt to try to do significantly better. There is, after all, no shortage of waste: it keeps piling up, literally.

Very different ideas about what is to be done

If there is a consensus that action is needed, why is it so difficult to make progress? There are at least two distinct reasons for the policy inertia (apart from the obvious one that there is little politically to be gained from facing up in the short term to what is inevitably a long term problem). The first is a fundamental one about the very nature of the problem and the question to which waste policy is supposed to be the answer; and the second is about the institutions, organisations and markets which are supposed to deal with the waste.

The conceptual problem can be stylised by thinking about two very different approaches – the “economists” and the more “fundamental environmentalists”. The economists see waste as the consequence of externalities. Economic activities, whether production or consumption, have direct costs and benefits that go through markets and are internalised in companies and through prices, and they have indirect costs and benefits, which companies do not pay for.

Companies have not until very recently paid for any of the carbon dioxide, sulphur dioxide and methane emissions which are by-products of their activities, they have disposed of chemicals to rivers and the sewerage systems, disposed of waste to landfill sites, and left their consumers and local authorities to collect and dispose of the packaging and plastics which come with the products they buy.

The obvious answer is that these externalities should be internalised. The polluters should pay for the costs they impose on others. But this is easier to state than to operationalize. The obvious question to start with is: who are the polluters? Is it the petrochemical companies that make the plastic, the supermarket that sells you the product wrapped in it, or you the customer who gets the benefits that the wrapping brings? Or is it the oil company that extracts the oil and gas in the first place?

Even if the polluter can be identified, how big is the damage? If a farmer allows pesticides to run off into the farm ditches, how can the consequences be measured, and how can these costs be assigned when all the farmer's neighbours are up to the same game?

This all matters, because one approach widely advocated in waste policy debates is "producer responsibility". It assumes we know all of the above.

There is a consequence of taking this economists' approach, focussed as it is on markets, proxies for markets, internalising externalities and ultimately on property rights. In this world, the optimal quantity of pollution is rarely zero. Indeed, zero is so costly that most economic activity would simply cease if it were applied. There is a world of difference between companies paying for the costs of the waste they produce and companies producing no waste.

This neatly brings us to the alternative stylised approach – the fundamental environmentalists' one. In this world, the target really is to get as close a possible to zero waste. It is a world of recycling targets driving onwards towards the ideal of zero. We should, it is argued, tread as lightly as possible on the only earth we have. Each of us should do everything we can to avoid producing any waste, and to recycle as much a possible. For the individual, this is all about composting organic matter, taking our bottles to the bottle bank, and carefully sorting through our remaining waste to put it in the right recycling bins.

There is of course nothing wrong with this approach. It is an ethical choice. But like all ethical choices it has consequences, in this case radical consequences. Imagine for a moment if everything that could be recycled was in fact recycled. This would be a world without mining, without new plastic material, indeed without anything "new" being produced.

Many have questioned whether this is technically possible. The answer is that it probably is. But this is in fact an uninteresting question, for the costs of achieving it would be enormous, and lead to a radical change to our way of life. Most of current economic activity would not be economically viable.

The fact that it is not economically feasible does not make it wrong. Indeed it may be that the current economic path, based upon global GDP growing at around 3% per annum, and population increasing to 10 billion and beyond, ultimately results in ruin. The problem is however that no politician is advocating anything even remotely like this, and winning support. Asking the electorate to vote not just for zero GDP growth, but a very significant reduction in their standard of living is (perhaps sadly) not going to make any progress. And in the meantime the waste piles up.

Recycling targets

Once this constraint is recognised, an immediate practical question arises. If not zero waste, what is a sensible recycling target? How far should policy dictate what happens to the waste, and should there be a target at all?

The trouble here is that there is in fact no clear and simple definition of what recycling actually is (analogous to the fact that there is no clear definition of renewables in energy). Take a simple example: a cardboard box that a delivery comes in. If it goes to a recycling plant that turns it into pulp for the paper industry, this involves lots of energy. It has to be collected and reprocessed, using lots of energy and other materials. The recycled product is not without environmental costs. They are not zero. 100% recycling might be very environmentally damaging. A lower per cent target might be more environmentally benign. Suppose now it is burnt in an incinerator. This results in energy from waste that would otherwise have been energy from nuclear, coal, gas or renewables. It might reduce emissions elsewhere, though there will then be a waste residual. Burning might be better than recycling – or not.

Take another example. Suppose there is a recycling target applied to glass bottles. It could be argued that glass is pretty inert, and lots of crushed glass bottles are not particularly harmful. Taking old bottles and processing them into new bottles is a substantive industrial process, with lots of associated pollution.

Recycling is not an end in itself if we want to minimise pollution. But here some environmentalists add a further argument. They argue that the resources themselves are finite, and therefore unless we recycle they will run out. Really? Run out of sand, iron ore, and a host of minerals? Run out of oil and gas to make petrochemicals? This was the line taken in the famous Club of Rome Report in the 1970s, and its predications have turned out to be rubbish. Whatever fate may befall us as we consume more and more, running out of the main minerals is not the most pressing one. Running out of biodiversity, and significant climate change are much more worrying.

Landfill

The reason we have recycling targets is not just to follow the ethical principle of zero waste. It is much more pragmatic: it is presented as an alternative to landfill. It is not hard to view the dumping of all sorts of rubbish in the ground

and covering up as anything but a risky strategy. It might be conveniently out of sight, but that is precisely the problem. It may not be possible to see what the consequences may be in the future.

The conventional defence of landfill is that it is cheap, and though there may have been bad practices and a policy of simply ignoring the contents, things are “better” now. This is hardly reassuring. Why should we trust the waste industry, and the licencing authorities, to properly control what goes in, and how it is monitored perhaps decades ahead?

A convenient response is to point out that the stuff in landfills is valuable, and that as minerals get scarce it will be worth re-mining it. This may be true for landfill gas, put into the gas grids and burnt for electricity. But this does not justify the disposal in landfill. It merely ameliorates some and only some of the methane leakage.

Waste to energy and other technologies

What then to do? If recycling is a relative and not an absolute ambition, and depends on costs and benefits and a careful weighing of the costs of recycling itself, and if landfill is typically poorly regulated and monitored, how do we treat the waste problems if we avoid landfill?

There are quite a few options. The waste can be burned. That is what households used to do, with the regular bonfire in the garden, or even in the fireplace. Farmers burnt their stubble and farms and factories often burned plastics and other waste materials.

The obvious problem is that burning does not stop harmful emissions to the air, and there is usually residual material. The issue is whether modern incinerators can capture and control the harmful emissions, generate heat and electricity, and then come up with a solution to what is left. This is a question of technology and credible regulation. Other solutions include composting and the application of new biological technologies, creating building products and materials, pyrolysis and plasma arc gasification. Whether these are “recycling” is a matter of semantics, and whether they are better than burning is a complex matter of environmental costs and benefits.

One inhibition to incinerators comes through local politics and communities. People do not want incinerators on their doorsteps for the very good reason that they do not trust the companies and the regulators to control emissions. They worry about PCBs and other gases they don't understand. As with landfill, the lack of trust has a rational basis. What is more, the building of an incinerator will lower house prices around the site. Why buy a house next to an incinerator, as opposed to elsewhere?

Just because there are limits to “pure” recycling, does not imply that quite a lot of it is economic. Prices of materials change. In the great commodity super cycle in

the last decade through to 2014, the economics of recycling were often good. But those high commodity prices are not necessarily permanent, and the falls in oil and gas prices in particular have changed the game for petrochemicals and many packaging products.

Part of the problem is about science. Any waste is ultimately a bundle of chemical compounds, and these can in theory be diced and sliced and reconfigured. Some waste does not need much treatment; hard-core and building waste can make good roads and future buildings. Other solids need considerable processing to render them into new building products and for other uses.

The point here is that recycling and reuse is not static: it depends upon technology, and that in turn depends upon research and development. This can be spurred by raising the price of landfill and hence improving the economics of recycling through challenging recycling targets. But it can also be helped through direct research funding.

The trust problem and credible regulation

The level of trust in the waste industry is very low. The public does not trust the nuclear industry to handle and dispose of nuclear waste, farmers to manage emissions of fertilisers and pesticides into the water systems, landfill managers and incinerators to burn waste safely.

As noted, this scepticism is justified. It has an obvious solution: *credible regulation*. At present this is diffuse, spread across the Environment Agency, local authorities, trading standards, building regulations, the police, the health and safety executive and others. No one is clearly in charge, and those that have authority do not have the resources or the legal backing to carry out their tasks effectively. Enforcement is patchy and the penalties are often weak.

If there is to be progress in waste policy, there will need to be a step change in waste regulation. The Environment Agency is multi-purpose. It is a regulator, a prosecutor, a flood defence business and much else. It cannot and will not ever have the focus to concentrate on environmental protection whilst it has the floods task. Floods dominate its spending, take up the bulk of its staff, and preoccupy its senior management whenever it rains heavily. Whilst grappling with the floods in Cumbria or the Somerset Levels, its leaders will always be distracted from landfill and fly tipping.

The starting point of a reform of waste policy is therefore to split up the Environment Agency, create a single Environment Protection Agency (EPA), and devote the resources so that it can properly carry out the waste regulatory functions.

It will only be able to do this if it has both the powers and the budget. The current powers are diffuse and the result of a long piecemeal process. In some cases they are pathetic. Take fly tipping: the law makes the property owner on whose land the rubbish is dumped responsible for getting rid of it. The pollutee,

not the polluter, pays. This is extremely serious for farmers, for wildlife trusts and other landowners for non-toxic materials. It is obviously very much more serious when the waste includes asbestos and hazardous chemicals.

The economic solution to crime policy is to set the incentives such that the combination of the probability of getting caught and the size of the fine produce the desired result (which again is almost never zero). To take an example, to get a “good” level of conformity to speed limits, we can either have lots of cameras and police cars and then a relatively low fine, or we can have much lower detection resources, but a much higher fine. In the case of fly tipping, if the penalty is prison for a considerable period or a very large fine, then more and more police would not so important. Fly tipping is pretty hard to detect.

Waste utilities

The second part of the “who is in charge” question relates to the organisations that have the duty to carry out the waste functions. Traditionally this has been with local authorities. They gradually accumulated utility functions from the nineteenth century onwards, eventually including electricity and street lighting, water and sewerage, roads and business and waste collection and disposal. They tended to be utilities and also regulators, as well as land use planners.

The problems with this municipal model are numerous. There are problems of capabilities, of budgets, of domains and regulation. In most of the utilities, stand alone corporations or private companies gradually took over. In Britain, this was complicated (or arguably simplified) when central government took a number of utility functions away from local authorities in the great nationalisation acts of the 1940s and centralised energy and much of transport. Water was eventually regionalised in the 1970s, before being privatised in 1990.

Waste remains the exception. Local authorities maintain the duty to make sure the bins are emptied and the associated functions. There are no public waste corporations, like Transport for London (TfL) and some other regional and local transport bodies. Budgets are short term, and local authorities often lack the ability to make capital investments themselves.

The case for waste utilities is a strong one, because instead of detailed prescription of targets, it would create a stand-alone company with a balance sheet charged with general duties. Water companies are charged with providing wholesome water, a function they have carried out very effectively. Waste companies could be similarly charged with the function of the safe disposal and management of waste. As with the water example, they would be regulated. Overall quality and standards would be set by government (as with water, notably through the requirements for the Water Framework Directive) and local authorities which the waste utilities would deliver against these standards. The regulator (possibly Ofwat) would interpret the general policy set by government. Though this might involve targets, the unintended consequences of crude measures could be avoided, with a dose of sensible regulatory discretion, derived

ultimately from the old rule of using *best available technology not entailing excess costs* (BATNEEC), together with the use of pollution charging where appropriate.

Waste utilities would have balance sheets, capable of setting assets and investments against debt (if they remain in the public sector) or debt and equity in the private sector. These companies would be able to expand or contract the areas they covered. There might emerge a waste utility for the combined cities of the north and for the whole of London, or there might be much more local companies. The licences would be set at a specific domain, but companies could carry out the functions and responsibilities of more than one licence area.

The choice between the public and private sectors is ultimately about the time horizon of budgets and the scope for raising finance (and about its costs). The TfL model has many attractions which could be replicated, but so too does the water company model. They could be public corporations, or private companies. The utilities model for waste is not determined by this choice – it remains open.

These new utilities may well go into the energy business, and bid for capacity contracts. They might use waste as one feedstock amongst others, or on its own. They would have the scope to innovate and cross industry boundaries.

Putting the bits together

Few would argue that British waste policy is in good shape. It is a mess and the results are messy. At the heart of the problem is a lack of clarity about the objective: whether this is an economic matter about costs and benefits and internalising externalities, or a more fundamental drive towards zero harm. Trying to mix up the two very different objectives together is at best counterproductive. Recent governments have been very clear about putting the environment into the heart of the economy. With this comes integration into economic policy, and in turn an economic approach.

We could go for the zero harm route, but the consequences are very radical, and there is little to suggest there is any serious public support, once the full costs and consequences to the standards of living are understood.

The economic approach makes recycling an instrumental means and not an end in itself. There may be a role for targets in pushing the technological boundaries, but as with renewable targets in electricity, there are serious costs as well as benefits, and targets tend to encourage behaviours which tick the target box, and which may be at times very inefficient. This has arguably been the case for the current recycling targets.

Instead of specifying detailed targets, a better way forward may be to set up institutions to properly pursue the public interest. There are two parts to this: setting up a *credible environment protection agency*, with the appropriate powers, duties and supported by a strong legal framework; and *a set of waste utilities*, either as public corporations or private companies. These are the steps that should be contained in a new Waste Act.