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The Greenpeace Offices, Canonbury.

Achievements of the last 15 years

1. Over the past 15 years household recycling in the UK has risen from 6% to 37% in 2008/9, with the major changes taking place since the turn of the century. Two authorities have now reached 60% diversion, and a further 27 are now over 50% including one (Bexley) in London. Waste arising have stopped growing over the past two years, indicating a decoupling between the waste and economic growth.

Problems

This is a remarkable transformation. But there are a number problems with the situation as it stands:

i) there has been a shift to ***co-mingled collections***, with a resulting increase in reject rates and poor quality materials. This downcycling of materials is of particular concern to the paper mills. Aylesford does not allow more than 15% of its feedstock to come from co-mingled materials and has fears about the decline in kerbside sorting. But it applies also to glass, which is commonly ground down and sold as road materials rather than reserved for higher value uses. There is no tracking system or metrics for assessing the material and grey energy value of recyclate.

ii) there is still ***no duty of care*** on those disposing of recyclate. Only a handful of Councils have a transparent system for tracking the use of the recyclate. As a result there have been a number of scandals including the export of recyclate for landfill in the Far East

iii) ***Separate food waste collections*** remain limited, yet the significance of compost for climate change through carbon sequestration (and in dry areas moisture retention) is at last being recognised.

iv) Although ***incineration*** has been slow to expand in spite of corporate and central government policy pressure, there is a danger that the disposal facilities now in place will put a ceiling on the amount of household waste that can be recycled. The recycling rate in Hampshire for example – which has for long been seen as a model of an 'integrated' strategy - has got stuck around 40% for some years now, and it is striking that the 50% plus councils have largely come from countries without large scale disposal plants. None of Hampshire's local authorities have reached the 50% mark.

v) There has been a succession of ***takeovers in the waste industry*** with the result that the four major waste companies now control the great bulk of the major waste contracts.

vi) ***Super-commissioning.*** The practice of local authority waste departments to contract all waste services in a single package (collection, recycling, disposal and street sweeping) has sidelined small firms and in particular the community sector. The community sector in mainland UK now has no kerbside recycling contracts and has been pushed towards niche areas such as furniture and white goods recycling. The concentration of the waste industry both limits options, and encourages large scale, capital intensive technologies rather than the relation intensive models pioneered by the community sector.

vii) There is the further prospect of substantial ***cuts in Council budgets*** and pressures on waste services to cut costs. This is likely to act as a pressure to reduce recycling rather than expand it.

2. There is the danger that the progress of the last decade will not be able to be maintained over the coming decade in spite of an increasing awareness of its importance

Zero Waste in Industry: Toyota-ism

3. In analysing where we are it may be helpful to turn to one of the pioneers of Zero Waste, one that has achieved remarkable levels within its own production, namely Toyota. Taiichi Ohno, the architect of the Toyota system, remarks that the underlying principle of the system is the elimination of waste.

4. The fact that the Japanese faced a restricted market place after the second world war meant that a company like Toyota had to find a way to produce small quantities of many varieties under conditions of a low level of demand, and severe material shortages. Ohno reversed the principle of producing according to capacity, and instead sought to produce only what was needed.

5. Ohno turned Toyota's manufacturing from being supply push to demand pull, from a push through to pull through model of production. This was an industrial revolution in itself, which has spread over the last thirty years into many sectors of industry – from Benetton to the supply of sausages for supermarkets.

Phase 1. Supply led

6. Viewed from this perspective, recycling is still at the supply push stage. Our policy in the UK and EU has been ***supply led***. We have all focussed on

the collection phase, and reducing the percentage of residual in domestic (and to a lesser extent other kinds of) waste

7. It has also been ***centrally regulated*** on a supply side basis. Targets are set for the percentage of waste to be recycled, with various incentives and penalties attached to performance.

8. As with all such arrangements, and the contracts based upon them, this system has the following features:

    - There is a ***contest over categorisation***: for example whether incineration (or incineration residue) should be counted as recycling; or whether recycling should be counted at the point of collection or at the point of exit from a sorting station;.

    - There is ***no consideration of the use of the recyclate*** (whether there is down cycling as with glass used for roads or contaminated paper sold for low grade paper reprocessing). In extreme cases the recyclate is disposed of as landfill either at home or, as the BBC suggested in their 2006 exposure, in Asia.

    - There are ***shifts of material to the most profitable categories*** – for example trade and institutional waste finding its way into household categories earning bonuses in collection contracts

    - From informal to formal economy. There is pressure to ***increase collection of material which is best processed domestically*** (as with the expansion of garden waste collections in order to increase recycling rates)

9. These features have been observed in all ***target driven/ command-and-control systems*** in the public sector – in:

    - the payment of benefits
    - housing stock allocations
    - the management of public housing voids
    - the collection of rent arrears
    - the management of call centres,
    - the handling of tax returns by the HMRC,
    - the treatment of A&E patients in hospitals,
    - in policing
    - the provision of social care [1]

10. In waste, it is not that this target system has not produced results – the incentives and disincentives are now substantial enough to drive all local

[1] see John Seddon, Systems Thinking in the Public Sector, Triarchy Press, 2008, for an explanation of why this takes place in such systems.

authorities to increase recycling. It is that the resulting systems fall far short of what could and should be done.

11. The system:

    - has led to a ***downward pressure on the quality*** of product
    - encourages ***capital intensive technologies*** rather than relational ones
    - has a ***growing rather than declining cost per tonne of collection and processing***
    - tends to a ***ceiling for recycling*** as the result of capital intensive disposal facilities

12. The ***environmental recycling movement*** has identified these problems. It has urged:

    - stronger regulations and enforcement.
    - improved incentives and disincentives
    - a more competitive process of contract allocation.

    But for the most part it has remained within the parameters of the supply led approach.

Phase 2 User led recycling

13. In the next stage of the recycling revolution we need to change this approach to one that starts from the ***quality of the recyclate*** and its use rather than from household waste and its diversion. We refer to this as user led recycling.

14. The first task is to specify the ***goal*** of the system. It is

    to preserve the resource and energy content of used materials to their highest extent.

    This means

    - identifying and/or establishing ***end use processors*** who can maximise the value of recyclate
    - ***high quality supply chain***. developing a supply chain that can provide high quality material
    - ***maximising the quantity and quality of secondary materials***

- ***promoting new upcycling uses*** of material through partnerships with manufacturers, materials research bodies and designers

- ***pressurising manufacturers and retailers*** to reduce the amount of material that is difficult to recycle

New information systems

15. To do this requires first the introduction of information systems and metrics that enables households, collectors, sorters and managers to improve their systems. It will have five components:

    i) ***detail on the use of all recyclate delivered to processors***, with a grading of its environmental contribution.
    ii) ***analysis of the quality*** of recyclate delivered (particularly significant for food waste) and the response of the reprocessors to it.
    iii) ***data on the reject rate*** of materials from the sorting station
    iv) ***granular data on collection***, including weights collected by street or block, (and ultimately by household).
    v) ***quarterly waste composition analysis*** to identify the progress of diversion and the composition of the residual.

    This data will be the foundation for the management system of recycling. It is based on the principle of constantly updated operational data not targets.

    It will be ***generated by front line workers*** undertaking collections and sorting, and analysed by them and by the households involved. The system will need a website as a platform for this information and suggestions about improvement, and a summary should be included in council newspapers and circulars. It is a system based on the principle of rapid feed-back linked to the capacity for action. It is also the basis for the pressure on firms and retailers to produce recyclable material where it is needed at all.

Design

16. At the same time as the system is oriented to the users of the recyclate, as a public service it is also oriented to the householders as initial collectors and sorters. Since householders are being asked to contribute to the process of recycling, programmes need to ensure that the system is designed to make it easy and rewarding for householders to engage:

    - households should be offered a ***choice of collection boxes*** that most suit their domestic circumstances (as happens in Moreland District Council in Staffordshire, the Council with the highest recycling rate). Currently most Councils offer a standard receptacle. The boxes should be well designed and re-usable.

- they should receive ***feed-back*** on the use of their recyclate, and the degree to which their neighbourhood or housing block has advanced.

- ***payment***. There should be some form of individual or collective recognition of their contribution. This can take the form of reductions in council tax for regular recyclers, payments to community association s (notably in high rise blocks) for the delivery of materials, the payment in an alternative currency or tokens and other contributions in kind on the model of the city of Curatiba in Brazil (in the UK it could be free compost bins/water butts/cheap bicycles).

Distributed processing and collection

17. The new systems should open the way for increased:

    - Processing and collection in the informal economy (notably on high rise estates)
    - Small scale collectors bundled into larger quantities
    - Local processing (closed vessel composting, mini mills)

Public funding and the structuring of the market for recycling

18. For local councils a central issue is the economics of such a system. The basic structure of income and costs in this system is the following:

    - The sales income of materials broadly covers the costs of sorting and delivery of the recyclate. The average gate fee to MRFs is reported by WRAP in 2008 as between £20-£25, but with a two stream systems of fibres and containers (with glass in a separate bag within the container compartment) this should be closer to zero. In the long term we expect the value of materials to rise faster than the cost of sorting (as higher value uses of recyclate are identified and as world material prices tighten) but in the short and medium term we should design the system on the basis of a zero gate fee.

    - The cost of a weekly two stream collection and delivery to a sorting station varies. We have assumed £70 a tonne for urban low rise households, and £100 a tonne for high rise. A separate weekly kitchen waste collection with small vehicles is an estimated £40 a tonne.

    - Set against these costs are 'opportunity savings", i.e. the cost of dealing with these materials if they are not recycled. These savings include the following:

        - Marginal cost reductions in residual waste collection costs. These are modest initially, but are substantial as soon as the volume of recyclate allows a shift to a bi-weekly

collection of the residual. We estimate savings of £20 a week after the introduction of bi-weekly collections.

- Avoidance of disposal costs. Landfill costs are on average £20 a tonne plus £48 a tonne landfill tax (as from April 2010). Each tonne of recyclate therefore saves £68 in disposal costs.

- There is an additional potential saving if the local authority concerned is subject to penalties for not meeting its landfill reduction targets (the LATS scheme). The scheme is likely to be scrapped.

- There is a further saving in transport costs if the sorting stations are close to collection relative to landfills or other forms of residual treatment.

- On estates there are large potential savings in 'failure demand'. This is the costs incurred through the failures of a service to meet the needs of residents. In many council services (e.,g. call centres) failure demand may run at 60%-70% of the total service (for example calls made to progress chase an initial inquiry). It is important to analyse the extent of failure demand in domestic waste management, particularly on estates, where a large proportion of the time of cleaners is spent on clearing up waste that has blocked chutes or been dumped on staircases or thrown out of windows.

19. Overall then, if the sale of materials covers the sorting costs, avoided collection and disposal costs can be expected to generate savings of at least 20% on existing residual waste budgets.

Role of Councils and collection systems.

20. The major savings, however, would come from a radically different approach to collection. At the moment this is sub-contracted to private waste management companies, usually as part of an integrated waste contract. These contracts are structured on a command-and-control model, with targets/incentives/specifications that encourage gaming, and incur large negotiation and monitoring costs. They also include average cost payments which often unnecessarily overpay for the wide variety of cases which characterise domestic waste lay-outs.

21. We suggest there is scope – particularly in rural areas and on high rise estates – for a more distributed system of collection, in which community groups/micro enterprises are provided with the basic equipment for collection (small vehicles/boxes/information equipment) and are paid on the basis of the materials they collect and deliver to the sorting station.

Instead of command and control the information metrics would allow the householders, the collectors and the council to keep track of progress. The task of the Council would not be to police the collectors but to find ways of supporting them. Groups could arrange collection times which fitted both with households and the collectors themselves, and provide a hybrid voluntary/remunerated model of service. Groups could be paid £70 a tonne, so a round of 5,000 household would produce 10-20 tonnes per week of dry recyclate, and a revenue of £700-£1,400.

Promoting material cycles

22. The model then is one of ***pull through rather than push through***. But more than this, it is the promotion of the pull, the encouragement of the use of recyclates by existing and new industries and the provision of a supply chain that can respond to the new demands. Its overall aim to is eliminate waste in the life cycle of materials, and to do this it needs a degree of co-operation and partnership (and a sharing of the rewards) rather than the creation of contractual/ownership and departmental barriers which make co-ordination, and systemic innovation so difficult.

23. There are a number of examples of such an approach, of which one of the most inspiring is of **Bio Regional,** who have developed a closed loop cycle for office paper in London. They collect used paper from offices through a company they formed called the Laundry, take it for processing at an existing mill in Kent, then re-sell the paper to the offices from which they collect. They have also worked for more than a decade on the technology of straw recycling which will allow them to add straw or hemp to recycled paper fibre, and thus increase the number of cycles for which recycled fibre can be used.

24. Similar local loops are emerging on the Bio Regional model for plastics, specialist glass products, building materials and some types of textile recycling (the town of Prato in Tuscany grew a major industry after the second world war on the basis of the remanufacture of discarded woollen clothing). But critical in the next period is the restoration of the biological cycle.

25. The recycling of food waste was for many years marginal in waste strategy. It was left to home composting which for the most part omitted meat and fish. The Italian model of recycling, which starts with the removal of food waste from the residual dustbin, and coupled with dry recycling collection, removes the need for regular weekly collections of the residual, has been slow to be adopted in the UK.

26. But it is striking how the latest round of UK figures showed that many of the collection authorities with the lowest amounts of residual waste going to landfill or incineration had adopted separate food waste collections (Weymouth and Portland, Staffordshire Moorlands, Taunton Deane,

South Somerset, as well as the top performing unitary Bexley Council in London as well as the best performers in Wales and Northern Ireland.

27. The development of small closed vessel composters and AD systems (such as the one Chris Reynell describes today) will greatly enhance the capacity of communities, schools and small towns and villages to compost their own organic waste and re-use it locally to upgrade local land and gardens, and in the case of AD, to capture and use the energy generated in the process.

28. Over the next decade, the widespread adoption of local closed loop organic cycles should be a primary aim of recycling policy. This is not only merely because it is the organic fraction which is the primary problem in landfill, and because it takes more energy to burn it incinerators than it generates. It is because compost is a natural soil enricher (replacing artificial fertiliser). It counteracts soil degradation, enhances moisture retention, and – critically – sequesters carbon thus reducing CO2.

29. Government policy should switch to the promotion of composting and digesting facilities that will produce an output that is of a quality high and safe enough to be used to enrich food producing land. These facilities will then act to **pull** source separated organic waste, as has been the case in North-East London with the Edmonton composting facility which was built when the proposal for a new incinerator was blocked. The emphasis is on the quality of the input, and exemplifies the point that should apply to all materials in a 'pull through' strategy for recycling.

Role of the Community Sector.

30. What should be the community sector's response to its current marginalisation? It took the lead in developing kerbside recycling in the UK, but as in Canada and Germany before it, it has been swamped by the entry of the large waste companies. Where should it go now?

31. A number of community companies are proposing to engage with the issue from the other end of the recycling chain. They are proposing to switch from a supply led strategy (collection) to a demand led one (organising a high quality supply chain for users). The move involves four steps:

    a) ***an alliance with UK based reprocessors*** and the establishment of long term supply/sales contracts with them. The concern here it to ensure the most environmental use for the recyclate, building on the work undertaken by WRAP. The aim is to promote upcycling rather than downcycling.
    b) The establishment/expansion of ***sorting facilities*** in order to ensure the quality of the recyclate going to the reprocessors. This facility will

only be offered to two stream or source separated materials, not commingled.

c) The setting in place of ***duty of care*** tracking and transparency on the use of recyclate.
d) Agreements with and support to a ***wide range of collection bodies*** including community groups, tenants associations, and direct service organisations. Local councils should be pressed to give recycling credits to these groups. The MRFs would themselves work towards paying for materials that have been fully source separated, and which require only bulking and sale.

32. There is scope for the community recycling organisations to develop their own collection services – for commercial as well as institutional and household waste. But collection will no longer be the primary raison d'etre. Rather ***the role of community organisations is to act as hub for high quality recyclate***, providing support for those involved in collection, and passing detailed information about the use of the recyclate for collectors to feed back to participating households.

33. The importance of restoring an organic cycle throws a spotlight on the compost and permaculture sections of the community sector. The work of the Community Composting Network and its 230 members now needs to move to the centre of the stage. It is currently grossly under-rescourced, with only one full time staff member and a budget of £140,000 in 2008/9. It needs an urgent increase in funding. For just as the community sector pioneered dry recycling collection, it now needs to spearhead the establishment of a national network of local closed vessel facilities and expand commercial and municipal collection systems of source separated food waste.

Conclusion

34. The switch from supply led to demand led recycling implies a quite different model to that pursued by UK and EU policy to date. It puts the focus on the users of the recyclate, on developing uses which preserve the material and energy value embodied in the recyclate, and on the development of local material cycles rather than global ones. It is particularly necessary for an expansion of organic waste recycling where the quality of the recyclate is paramount for the safety of the composting process and its place in the food chain.

35. This does not mean the dismantling of the current system of targets, but rather a strengthening of them. In spite of the inherent limitations of such systems, they remain one of the prime drivers to recycling in the UK. Increased targets will re-assure those developing upscaled uses of materials that there will be adequate sources of supply. But as the new information systems develop, the old recycling targets will appear as crude estimates of the state of recycling in any one place, like a blurred photograph compared to a high definition DVD. RM 23.1.10