

PEER REVIEW REPORT ON

'MODELLING THE IMPACT OF CHARGING FOR WASTE IN ENGLAND'

BY EUNOMIA RESEARCH AND CONSULTING

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INTRODUCTION

Peter Faircloth of Cranford Economics Ltd and Bob Lisney of LRL consultancy Services Ltd were asked to peer review the report produced by Eunomia Research and Consulting 'Modelling the impact of charging for waste in England'. The report was considered separately and notes compared in discussion. This report contains the results of the individual analysis and the outcomes of the joint discussion.

The report presents comments matching the three key headings in the Eunomia report but with the addition of some general observations at the beginning which we deem as important given the focus on this agenda item within the national waste management debate.

GENERAL OBSERVATIONS

It is important to use this report within the parameters of its brief and no more. The issues around charging are much wider than those covered in the research.

The report has broadly kept to its brief. However, there is no reference to achieving similar results through other means. The question of public perception about fairness is also not covered.

The style and presentation of the report could be improved to make it easier to read and understand. As a general rule, adding the following to each section is suggested:

- An introduction to explain its purpose and structure.
- Text boxes. These can be helpful in introducing, explaining and drawing conclusions about important aspects that might otherwise be confusing if included in detail in the general text. The treatment of elasticity and green waste in Section 3.3.1 are examples.
- A summary and conclusions. This is important to elucidate the assumptions and findings of each section, particularly those having important consequences for the analysis.

There are no overt conclusions presented but the overall tone predominantly veers towards a conclusion that charging;

Reduces volumes of waste

Increases recycling

Reduces costs

It is not a wholly evidence based report. It comprises a review of published papers on the subject of charging but no papers/reports on outcomes without

charging are considered for comparison. A modelling exercise is guided by conclusions from a range of hypotheses tested in the literature review – although these are not clear from the text - accompanied by a range of assumptions.

It is understood that Defra did not require this project to look at wider issues, but what is not covered by the report or its brief is as important. This is a topic which will be subject to senior political debate, especially since it has been raised as a topic for consideration within the Lyons review of local Government.

It is suggested that some caveats are included in a preamble to the report covering topics listed later in this paper so that the importance of the research is not lost or taken out of context.

Issues for DEFRA

For DEFRA the general scope of the debate must cover consideration of outcomes such as:

Who benefits

Whether charging changes consumer behaviour as to prevent waste arising (see below)

Whether 'prevention' is diversion to other forms of processing (e.g. home composting) and is thus cost avoidance and statistical diversion benefiting a local authority's targets and budgets

Whether the aim is to reduce the cost of the waste service

Whether the aim is to increase recycling, reduce biodegradable material going to landfill or reduce the use of landfill

Whether the aim is to help obligated companies meet packaging targets

Whether there is an overarching Government aim of meeting the EU landfill directive targets with a degree of certainty

The debate should also be placed in the context of;

A changing market place where there is uncertainty as to who will influence behaviour e.g. media, retailers

Which systems and infrastructure decisions, will be implemented by local authorities. Consideration of the optimum economic and environmental routes for recovered material and

Whether the increase in landfill tax will itself be a sufficient lever for the implementation of actions, incentives and changes without the need for charging.

This latter issue is important. The landfill tax increases are aimed at driving material away from landfill and may focus attention towards the infrastructure alternatives. Charging is about creating incentives to recycle more and put less out for disposal. How these two systems would work together over time needs to be considered.

Issues for Local Government

For local government in England, where there is a predominance of two tier systems for collection and disposal of municipal solid waste, there will be an issue regarding which authority levies the charge. Whilst the collection authorities may be the more obvious choice if they take decisions on systems, thereby affecting outcomes, without due consideration of processing and disposal outlets or contractual agreements regarding the management of waste volumes which in two tier areas is the responsibility of the disposal authority, this could lead to imperfections in the system and less than optimum benefits from charging.

The costs of charging may well fall to the WCA as well as the cost of introducing collection systems that will create the best opportunity for collecting material, but, as the report highlights, it is likely to be the WDA who will benefit most as the avoided cost of landfill will create savings.

There are thus some constitutional and governance issues to be considered. This is probably a matter that would need to be formalized in the context of the Joint Municipal Waste Management Strategies so that systems and costs are planned in the round and there is joint ownership of the charging regime as well as of the benefits of changes in routes of materials.

Timing and scope are also important factors. Some of the studies analysed in the literature reviews indicate that reduction in volumes could not be explained and that various routes were probably taken, in addition to genuine minimisations, including:

- Burning at home

- Taking more to free CA sites

- Dumping in another area which did not charge

- Some fly tipping

There would be a risk of waste tourism if one authority had charging and neighbouring authorities did not. The brief did ask for some views on the timescales for introduction but there is no considered report on this aspect. This will be a material consideration given the evidence that there will be some fly tipping, albeit much more modest than prevailing political and public views suggest. Evidence in the report indicates that illegal fly tipping is an issue, but with enforcement, not one that has a big impact.

It is suggested that a separate section be dedicated to the debate with evidence drawn more specifically from the literature reviews and case studies.

Waste prevention

There is a need to define what the term 'waste prevention' means as used in the report. It seems to be inferred that charging prevents waste totally when it is meaning that waste is moved to another stream more often than real reductions in total waste produced.

The displacement routes listed above are all valid in behavioural terms but the overall volume of 'waste' treated will be broadly the same. If charging displaces material to these routes then, environmental impacts also need to be considered. The 3m tonnes estimated as prevention in the report (table E6) may have to be accorded wider societal or environmental damage costs.

Food waste

There is a presumption in the models that food waste is separately collected, as are dry recyclables and green waste. This is a fundamental assumption and one that will affect costs of collection; i.e., an additional service and processing. There is also a need to consider the market for the product based on its utility. At present only 40 councils collect food waste and processing facilities are still in development. It is suggested that a non-food waste option also be modelled.

Given that a substantial area of England has long term contracts for systems and processes (e.g. for MBT plant) where food waste may be a fundamental part of the process and input tonnages, a realistic scenario should also be modelled that would consider the impact of charging on regimes that did not seek to change behaviour in such a consistent way as the models shown.

Charging should be able to deal with all processes and systems even if a preferred model becomes established in the future.

Executive summary

The executive summary should be a stand-alone document, summarising the purpose, context, approach, assumptions, findings and conclusions of the study.

LITERATURE REVIEW

The literature review is a comprehensive piece of work, the relevance of which is not fully revealed. It could be improved significantly by stating clearly the consultant's conclusions reached on each of the hypotheses tested and by summarising all parameters and assumptions derived from the review that are taken forward to the analysis.

It may have been useful to have included some views about the relevance of some reports which were conducted in the early days of charging and whether the authors considered their findings still to be robust in the light of years of recycling, as well as of technological change, such as on board weighing. It would have been more relevant to the text had the tables contained in Appendix A included more figures and information and been less descriptive. For example, each case studied could have been referenced with population covered, average kilogram per household p.a., comparisons made with control areas, the date of introduction, and some indication of the continuance of achievement in the percentage of materials diverted from landfill and of the overall waste produced per household.

The review fails to reveal the extent of charging in Europe and elsewhere. Given the importance of the work, an indication of the extent to which waste charging has been adopted elsewhere would have help set the context for the review. It is far from the case that every country, province or municipality has a charging regime. The review should make clear how prevalent charging schemes are in the countries considered, and possibly include a table showing:

Country, total population, population covered by charging, total number of authorities, population subject to charging, current total MSW, current Kg per household, recycling tonnage, recycling %, disposal route for residual, unit costs before and after.

The variations in outcomes since charging was introduced would show clearly the impact of charging elsewhere

The governance and tax regimes of other countries sometimes have an effect on outcomes; e.g. is the service run by the private sector, do the schemes take commercial waste and, if so, are these in their figures?

Eunomia have not considered literature which covers non-charging means of diverting waste even though this was part of their brief. It is considered a material input to the debate.

LOCAL AUTHORITY MODELLING

(a) Strategic level comments

Analysis of the responses to different charging schemes on the different collection systems comprises the bulk of the report. Four collection systems are defined for the local authority modelling, each providing the baseline against which the affects of different charging schemes are calculated. The collection systems were intended to be representative of specific local authorities, having characteristics likely to be in place at the turn of the decade.

Recognising the caveat on food waste mentioned earlier, and the need to model other non-charge options, these four systems, together with an additional two introduced for the national modelling, are considered to have a rationale which is sustained by the research. Nevertheless, it is felt that the analysis should also address collection options related more to those found in England today. This would recognise that England starts from a current situation of known systems and development plans, some of which have long term implications for the collection of materials and for specific recovery processes.

For example, Lancashire, Somerset, West and East Sussex, Hampshire, Cornwall, Kent, Essex, Leicester, Greater Manchester and other counties covering much of the country have existing long term arrangements onto which charging schemes would need to be superimposed and their incremental impact assessed. As current performance, tonnage and cost data for these counties are known; they might be used in conjunction with the models to reflect the most likely outcomes for existing situation as well as those based on more theoretical criteria.

All scenarios seem to assume municipal control which is likely to be the case predominantly in England, but the systems reviewed included private or public/private organizations, such as utility companies, in which a culture of charging would have been more recognizable. The future for charging in England may include a mixed economy. The costs/savings produced in the report are totals only, and are not ascribed to the entity or entities in which the cost savings are realised. This is likely to be important when there are a range of players involved in a system.

Also all scenarios would appear to assume no change in key players, no new entrants and a continuation of current waste compositions. This is not a major consideration, as it is really not possible to model such changes given their subjectivity, but a statement which makes it clear that the report is based on an allocation of responsibilities and processes as they are today would be helpful. Assumptions about home composting are also made. This is a difficult area to predict. It is right that where possible homes should use a compost bin, but what

is assumed is that there will be a consistent use after charging. Given the importance of this assumption, it would be useful if reference could be made to those case studies where long term composting effects can clearly be shown.

(b) System assumptions

The modelling is split between local authority modelling and national modelling. The assumptions relate to a hypothetical situation in 2013, with judgements being made about recycling achievements from kerbside as well as at CA sites.

The local authority modelling is undertaken for four local authority types, each serving a population of 50,000, and each defined by different housing type distributions and collection services. These were agreed in discussions with Defra and the Steering Group to be broadly representative of specific local authorities and of the systems likely to be in place at the turn of the decade (the baseline). The total collection costs per household and the direct cost saving per household of introducing the different charging schemes are calculated relative to the base line¹.

The assumption is made that material changes to the defined collection systems relate solely to the introduction of a charge. The impacts of five charging schemes are assessed for each of the four authority types.

The literature review reveals that evidence relating to the responsiveness of individual household behaviour to waste charges is limited. Income and price elasticity is discussed in the text but is not used directly in the analysis to inform responsiveness to the different systems and charges. The consultants acknowledge the difficulty of applying the work of Gilkgraaf and Gradus to the analysis and have therefore relied on it for guidance purposes only.

A number of decision rules were agreed with the Steering Group and assumptions made accordingly by the consultants concerning the affect of the different charging schemes on the amount of residual waste set out for collection. These decision rules and assumptions underpin the analysis of material flows and costs, and are therefore crucial for the outcomes of the analysis.

The consultants draw from their own experience and the literature (unstated) to formulate the waste reduction parameters set out in the report (Tables 24 and 25). As these parameters effectively determine the outcomes of the analysis, it is important that they are clearly defined and presented. More detailed explanation of how they have been derived, and their relationship to the decision rules, would be helpful (this could possible be attached as an annex to the section). A fully

¹ The actual meaning of cost savings per household is unclear within the dynamic context of increasing costs, non-direct payment for waste services, and dual responsibilities for waste collection and disposal.

worked example demonstrating the relationships between the parameters might also be preferable to the rather confusing example given in Section 3.2.2.

The report places much emphasis on garden waste, to the extent that it appears unnecessarily to complicate the analysis. A discussion of the relationships assumed between garden waste generation, collection and disposal and the charging schemes, perhaps set out in a separate text box, would improve both presentation and understanding.

The peer review team has not reviewed the Local Authority model as it is the intellectual property of the consultants. The team was offered the opportunity to do so at the consultants' offices.

The report does not contain a detailed description of the Local Authority model. This is necessary, however, to understand properly the nature of the computations made in calculating the costs and cost savings reported in Section 3.5. Without this understanding, the results must be taken at face value. Given the complexity of the parameters involved, and the dynamic nature of the waste management business, this would probably be unwise.

The report would be improved by the following:

- An introductory text describing the model's purpose, structure, data requirements, logic, calculations and outputs.
- A broad schematic diagram of the components of the model and the linkages (flows) between them.
- A detailed waste/materials flow chart, setting out all stages of the analysis to demonstrate the waste/material flow consequences of the different charging schemes. Possibly in the form of a fully-worked example, taking account of all relevant assumptions relating to flows and costs.
- A separate annex setting out all assumptions and parameters on which the analysis is based. This would serve two main purposes: (i) enable users to understand and comment upon the assumptions made; and (ii) enable alternative configurations of assumptions (within constraints imposed by the decision rules) to be used to conduct sensitivity analyses.

Policy makers need to know not only the assumptions on which the analysis is based, but also the sensitivity of the outcomes to plausible changes in those assumptions. It is recommended that the results of such a sensitivity analysis should be included in the findings.

Government might also want to assess the consequences of other plausible changes to specific parameters. It is recommended that the model structure should be modified as necessary to allow all assumptions on which the analysis is based to be input to a separate sheet and for this single sheet to form the basis of all inputs to the model. This adjustment would enable the sensitivity of

outcomes to changes in core assumptions to be readily tested at the request of the client.

THE NATIONAL MODEL

The national model estimates the total cost savings of extending a charging regime across England. The analysis draws upon the detailed cost analysis undertaken at local authority level and extrapolates this, subject to various assumptions and decision rules, to an England-wide context.

The waste management system prior to charging is taken to consist of six types of collection system: four correspond to those analysed in the LA modelling and two are introduced to reflect high rise and rural areas.

A number of core assumptions underpin the national model.

- The proportion of households in the UK coming under each system (Table 33).
- The proportion of total households under each system that are subject to charging (Table 37).
- Total quantity of bin waste generated per household under each system (Table 35).
- The composition of household waste under each system (Table 34).
- Recyclable capture rates under each system (Table 36).
- The reduction in total waste under each system in response to the different charging schemes (Table 38).
- The disposal routes that are applied to the amount of residual waste avoided (Table 25).

The national model performs two key functions. First, it draws information from the LA model for the different collection and charging systems and applies this, subject to decision rules and assumptions, to the household populations taken to fall within the six different systems. Second, it calculates the additional costs to community amenity sites arising from changes in the usage of these sites caused through behavioural change in response to the different charging systems.

The model calculates total net financial savings across the UK and the average cost saving per household (both for all households and for those included in a charging scheme).

A detailed description of the national model is not contained in the report, elements of it are unclear to the reviewers and there is no means by which to verify data used in it. Due to its linkages with the proprietary LA model, it is not possible to interrogate the national model to examine the effects that changes to core assumptions might have on the outputs.

The proposals made above in the context of the LA model are equally relevant here. Also, all assumptions on which the analysis is based should be identified and set out clearly in an appendix to the report. They should be included also in the model input sheet, also referred to above.

Conclusion

The report contains a substantial wealth of detail, and it is recommended that it be published in two parts. A main, concise report would set out the evidence, assumptions and outcomes, and a separate report would contain details of the international research, the approach and methodology on which the analysis and modelling is based, and give examples of core principles and calculations.

It is recommended that the consultants should be given the opportunity to reflect on the comments made both in this paper and at the two subsequent meetings with government officers and the peer review team, and produce a final version for wider consideration.

The report's summary and conclusions are honest and objective, but it is worth highlighting the generic conclusion that charging has three key outcomes: a reduction in waste quantities, an increase in recycling rates and more illegal tipping. These conclusions are based mainly on the literature review and on the assumptions made; the potential outcomes for England rely on the 'somewhat shaky basis' of the assumptions used for the modelling. Whilst well covered in the report, the scenarios modelled should be extended to include an assessment of the incremental impact charging would have if introduced into currently highly successful systems and infrastructures based on non-charging approaches. This might offer a more realistic and balanced outcome, whilst still being guided by decision rules, assumptions and the internal logic on which the model is based.

With the caveats clearly mentioned in the report this contributes substantially to the debate on charging and will allow the wider contexts mentioned earlier to be informed by some considered modelling.