



COSTS OF CONTAMINATION REPORT 2012

Resource Association survey of reprocessor members' assessment of the impact of poor and inconsistent quality recyclate on manufacturing costs – December 2012

Introduction

This report summarises the results of a survey of all the Resource Association reprocessor members. It seeks to identify the costs to UK reproducers of recycling products using recovered materials and dealing with inconsistent and poor quality recyclate received by them from the UK municipal resource stream.

We commissioned this survey in order to further inform the debate about high quality recycling and how to achieve it. In the climate in which claims are made about the efficiencies and reduced costs associated with co-mingled and MRF sorting systems in the UK, we thought it time to understand better how costs that were perhaps incurred in collection systems appear to have shifted and become cost burdens for our manufacturing base.

Methodology

All reprocessor members of the Resource Association were asked to submit detailed data on costs associated with input of recyclate to their manufacturing processes, and relate this to operational contamination levels.

All nine reprocessor members¹ participated in the survey, and the survey covers over 3 million tonnes of UK reprocessing capacity. It is therefore a good sample of UK reprocessing, but clearly not fully comprehensive as it covers members only, and for some members it covers some but not all of their manufacturing operations.

¹ Aylesford Newsprint, Closed Loop Recycling, ECO Plastics, Huhtamaki (Lurgan), Novelis Recycling, Palm Recycling, DS Smith Recycling, Smurfit Kappa Recycling, UPM

Participants were asked to provide data following a template, to cover a range of costs associated with the management of poor and inconsistent quality material. The template is attached as Appendix 1.

Given the requirement to manage the individual commercial confidentiality of each reprocessor, the received data was handled only by the Association's Chief Executive and independent analysts at Resource Futures under a non-disclosure agreement in compliance with competition law. The data from all participants was analysed to produce an overall level of costs associated with poor and inconsistent recycle without identifying the individual company data. While this includes data from a differing range of businesses (across metals, paper and card and plastics reprocessing) the overall and average figures highlighted provide a valuable snapshot view into the cost burden.

Based on tonnage data we have used the current operational contamination rates reported by reprocessors calculated at 5.85% (this rate is based on a wide range of reported operational contamination rates and cannot be related to any specific material product market specifications). We have used the data to calculate the impact of an additional 1% contamination, and also provided estimates based on the use of the mean and maximum contamination figures reported by WRAP in their 2009 MRF study - MRF Quality Assessment Study tables 12 to 14

(<http://www.wrap.org.uk/sites/files/wrap/MRF%20Quality%20Assessment%20Study.pdf> summarised below as Table 1:

Table 1

Material	Mean contamination %	Max contamination %
News and PAMS	9.8	22.0
Mixed plastic bottles	12.2	23.0
Aluminium	2.5	8.0

The reasoning behind using this data reference point is that it is real data from MRFs and so demonstrates what levels of contamination can be experienced from sourcing recycle from this market. In Table 2, an average of these figures is taken to provide a mean and maximum contamination % figure for these materials of 9.8% and 21.8% respectively. This is based on tonnage proportions, and reflects that paper dominates this analysis at 60% in terms of tonnage.

Summary of findings

It is clear from the data received that all nine reprocessors surveyed report real cost burdens associated with the management of poor and inconsistent quality of recycle for their manufacturing processes. Our summary findings are listed below as Table 2:

Table 2

	Current operational contamination rate	Current operational contamination rate + 1%	Mean Contamination	High contamination
N of reprocessors	9	9	9	9
Process tonnage	3,276,804	3,313,168	3,426,740	3,964,316
Average contamination	5.9%	6.9%	9.8%	21.8%
Contamination cost	£51,347,714	59,682,100	£75,469,936	£177,826,644
Cost per tonne processed	£15.67	£18.01	£22.02	£44.86

The cost impact of poor and inconsistent quality of recyclate for this group of UK reprocessors is significant - at a conservative estimate of **at least £51 million annually**, representing an **average cost per tonne of £15.67**.

Commentary

It should be noted that steps have been taken in this analysis to err on the side of caution and not to overstate the cost burdens. Nevertheless, these figures represent a significant material cost for UK manufacturing.

It should also be noted that we haven't tried to extrapolate these costs onto the whole UK reprocessing sector. We have concentrated on reporting real data from the membership of the Resource Association. It would be reasonable to conclude however, that other reprocessors may face a similar burden and so the real cost of poor and inconsistent quality recyclate to UK manufacturing will be much higher. Although we have accounted for just over 3 million tonnes of UK reprocessing capacity for which we have data available, this represents around half of the UK reprocessing capacity for paper and card, plastics, aluminium and glass.

What is clear from the analysis is the impact of poor and inconsistent recyclate quality on UK manufacturers and reprocessors. While the burden of these costs is being absorbed by the reprocessing sector, it acts as a real barrier to future investments and is also costing jobs in the UK economy, by limiting expansion opportunities for UK reprocessors. While further detailed research is needed on the job creation potential of higher recycling targets and expanding UK reprocessing, indicative figures from our plastics reprocessors² suggest that investment equivalent to a year's costs of contamination (£51m min) could create up to 700 direct and supply chain jobs and significantly support the Government's ambitious plastics packaging recycling targets.

² A £30m investment at ECO Plastics has created 165 direct jobs. Expansion of plastics reprocessing with £51m investment could create a further 275 direct jobs and 412 indirect jobs (based on a multiplier of 1.5 additional indirect jobs in the supply chain for each direct manufacturing job).

Our view is that research shows starkly how notional cost savings in changes to municipal recycling collection systems have simply shifted costs significantly towards manufacturers in the drive for quantity over quality. We do not consider this to be a sustainable burden for UK reprocessors to carry. Several actions are needed to address this serious issue for the UK green economy, and to deliver both quality and quantity of recycling, including:

- a fresh look at the whole municipal recycling supply chain, including action to better regulate the output of MRFs
- this must include a mandatory MRF Code of Practice that demonstrably improves the quality of UK MRF output through a robust system of monitoring, material sampling and unannounced inspections
- further robust action by regulators to enforce TFS Regulations and ensure that all recyclate exported meets legal quality requirements – doing this would undoubtedly lead to quality improvements in the recyclate also destined for UK reprocessors
- more research by Government and its agencies to understand better the relationship between collection systems, public behaviour and contamination of recyclate - with the purpose of improving communications and operational practice to deliver better quality.

Conclusion

We hope that the provision of this information will add an extra dimension to the debate about the need for high quality recycling, how it is to be achieved, and how improving the quality of materials made available to UK manufacturing will help to sustain and expand our manufacturing base in the forthcoming age of material insecurity.

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Appendix 1 – template for data capture

Direct Costs from Non-Target Material in Recyclable Supply

1. Cost of extra recyclable supply to replace non-target material
2. Additional transport costs
3. Cost of disposal of non-target material

Variables

Tonnage requirement

Market price for recyclable supply

Load capacity of transport delivery

Cost of transport delivery

Non-target material disposal cost – Landfill, incineration, MBT, further recycling etc.
(include transport cost if applicable)

Supplier quality rebate

Example:

No contamination:

1000 tonnes requirement @ a market price of £100 per tonne = £100,000

Transport cost @ 20 tonnes per delivery = 50 deliveries @ £200 per delivery = £10,000

No disposal costs

Total cost to fulfil recyclable supply requirement = £110,000

Non-target material contamination of 5%³ (no rebate agreement)

1053 tonnes requirement at a market price of £100 per tonne = £105,300

Transport cost @ 20 tonnes per delivery = 53 deliveries at £200 per delivery = £10,600

Landfill disposal cost of 53 tonnes @ £100 per tonne = £5,300

Total cost to fulfil recyclable supply requirement = £121,200

5% contamination has a direct cost impact of 10% in this scenario.

Indirect and Reprocessing Costs – other factors to be taken into account where possible

4. Fuel and emissions from transport to site of extra recyclable supply to replace non-target material
5. Fuel and emissions from handling extra recyclable supply on site
6. Fuel and emissions from transport of non-target material to disposal
7. Impact of non-target material on process efficiency
8. Loss of target recyclables alongside non-target material
9. Impact on reprocessor output quality
10. Extra energy or chemicals required to manage and extract non-target material
11. Impact on equipment wear/failure due to exposure to non-target material

³ Tonnage requirements assume that the additional material also contains 5% contamination.

12. Loss of recycling opportunity of non-target material in the correct reprocessing sector
13. On exports; fuel and emissions impacts would be much higher and potential impacts from non-target material disposal are unknown.

Appendix 2 – notes on the methodology from independent data analysts

These additional notes from Resource Futures provide background and commentary on the data provided and analysis carried out:

- The accuracy of the data has not been audited; it has been used as provided by the reprocessors.
- This is indicative data based on the nine reprocessors surveyed. It is not a full picture of the whole of UK reprocessing.
- The respondents provided data in a number of different formats, with differing degrees of transparency.
- The data strongly suggests that some reprocessors have taken a more in-depth look at costs than others, so that a more complete set of data is likely to show higher costs.
- We have been conservative in the evaluation of the data provided whilst making reasonable assumptions where necessary. For instance where respondents showed additional mechanical and maintenance costs resulting from contamination, we have assumed change is proportional to contamination levels, although further detailed work would be needed to fully establish this.
- The contamination data is for all material throughputs for each plant. Of course this will be a mix of co-mingled and separately sourced materials.
