



Review of Opportunities and Potential Barriers to Using Recycled Content Magazine Paper

PAP0029:

Date of commencement of research:

Finish date:

Final Report

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Date (published)

1 Executive Summary

Aims and Objectives

The objective of this work is to demonstrate to decision makers and influencers in the magazine publishing and printing industries the opportunities for using recycled content papers successfully in magazine production. In doing this, the aim is to give publishers and printers the confidence to move to recycled content papers, where it is appropriate to do so, by providing information on suitable applications, paper availability, paper performance and print performance.

Background

In the UK we produce enough waste to fill the Albert Hall every two hours, or to put it another way, enough waste to fill Lake Windermere every eight months (source: wastewatch.org.uk). Every year we landfill more than five millions tonnes of paper, a waste of a valuable resource. Existing landfill void space is being rapidly depleted and this is especially acute in the South and Wales. By way of example, a report by the National Audit Office Wales stated "On current trends and assuming a best case scenario, existing landfill capacity will be exhausted before 2010".

There is growing recognition that landfill is not a sustainable approach in the long term. Certainly, when it comes to paper waste, landfilling is acknowledged as being the worst disposal option and some form of recycling the most desirable. The solution it is not a question of 'sustainable forestry' or 'recycling', but of combining these two to deliver the maximum environmental benefit. Where virgin fibre is used, sustainable forestry is necessary. However, when it comes to paper and board waste, recycling provides an economic and resource efficient alternative to landfill.

To date, the majority of Printings and Writings (P&W) paper collected including magazines has been used in the manufacture of Newsprint or Tissue. Some has also been used in lower grade uses such as corrugated flutings. However, increasing amounts of paper need to be diverted from landfill so the question of a market to absorb this material becomes important. In 2004 the UK consumed 4.8mT of P&W, with very low recycled content, and Newsprint (2.5mT), Tissue (1mT) and packaging (4.2mT) all already at high levels of recycled content. Across the EU the picture is similar. As collection rates rise and the opportunity to use more P&W material in other sectors is low, a proportion needs to be recycled back into in appropriate P&W production.

The surplus of recovered P&W also represents a significant raw material opportunity. From this comes a range of WRAP's activities to increase demand for recycled content P&W papers including: this magazine project, running a 8 person national advocacy team to promote the use of recycled content paper by corporates, central government and wider public sector, potential financial support for increased Recycled P&W manufacturing capacity (subject to State Aids clearance) and a review of office collections schemes.

Ultimately a balance needs to be achieved that optimises the fibre flows and there may be a limit on the proportion of magazines that it is desirable to print on recycled content papers in the longer term, however, at less than 3% of current production that point is expected to be some way off.

Summary of the Findings

Currently, magazine publishing in the UK consumes in the region of 1 million tonnes of paper per annum. Only a small fraction of this paper contains recycled content which means that an even smaller proportion of the fibre used in magazine publishing is of recycled origin. Whilst the collection and reprocessing of magazine publishing process wastes (such as unsolds) is efficient and initiatives are in place to increase post-consumer magazine recycling, this project explores the scope to increase the proportion of recycled fibre used by magazine publishing to ensure long-term end markets for this recovered fibre.

A varied selection of papers incorporating recycled fibre is available for magazines. The range encompasses weights from 45gsm to 350gsm, gloss, silk and matt coated as well as machine finished uncoated grades. Research into paper availability suggests there should not be a barrier to increased use as there is in excess of 5 million tonnes of recycled content papers available in Europe per annum and there is additional mill capacity that is yet to be fully utilised and more capacity is being brought on stream.

Although the market research has identified seven categories of magazines where some publishers have already started to use RCF papers, this represents a small percentage of the total paper used for magazines in

the UK – 1% to 3%. All the specialist magazine printers contacted for this project reported that they have had some experience of printing on paper with recycled fibre content. The overwhelming majority reported no difficulties, quality problems or adverse running circumstances, in fact the consensus was that they presented no more of a challenge than equivalent, virgin papers.

Publishers, who are the major specifiers of paper, gave a broader spectrum of opinions on this subject than the printers. Those that have chosen recycled content papers, which meet their performance requirements, have no specific concerns. However, many publishers contacted for this project either had no experience of using paper with recycled content or had trialled them some years ago when recycled content papers were inferior to the virgin equivalents and before the mill technology had been developed to achieve the quality of product that is now available. It was also indicated that publishers expected resistance from printers to using recycled paper. That reaction is the opposite of the “no issue” response received by the project team from most of the printers contacted.

For many publishers their environmental focus for paper is entirely on the sustainability of the virgin fibre source rather than on the opportunities for using recycled content papers. Although using papers from sustainable sources is important, the sole focus on this issue does not address the important issue of reducing the amount of paper which is landfilled. This is the key driver for increasing the manufacture and use of recycled papers.

The primary criteria for a publisher’s choice of paper centre on production issues and include minimum downtime, high running speeds and good quality print. Whilst paper quality and feel are important for maintaining brand identity, cost is a crucial consideration when choosing a magazine paper. The general consensus is that, depending on the grade and quality that the recycled content paper is replacing, the range of price differential between recycled content and virgin fibre paper is + / - 5%. Another important factor for consideration, particularly for B2B publishers, is the weight of the paper and its subsequent influence on mailing costs. The priority of each criterion will depend on the market sector into which the magazine is selling. The paper cost represents and estimated **13%** of total publishing cost or 35% to 45% of the printing costs.

Due to the diversity within the magazine publishing sector there are a high number of opportunities where papers with recycled fibre content would be suitable. This report identifies categories of magazines where these opportunities are strongest. The identification is based on:

- consideration of the RCF papers available
- their fitness for purpose
- the physical properties of the papers
- the magazine printing processes

Without doubt there is an increasing awareness of environmental issues within the printing and publishing industries as there is across the magazine reading general public. For some publications with an environmentally conscious target market, printing on recycled grades is already normal practice.

P&W papers including magazines are used in the production of many different paper products including newspapers, tissue and corrugated flutings. Paper fibres themselves can only be recycled 5 or 6 times so these products, which typically have very high levels of recycled content, require new fibres to be introduced from different sources such as P&W to maintain the fibre flow. As such there will be an economic and technically optimum level of recycled fibre in P&W as a whole. Exceeding this limit could mean that the quality of furnish available for other recycled paper production could be undermined. It is estimated that there is significant scope to increase the amount of recycled content magazine paper used before the fibre flow approaches the point when the benefits of increased recycled content is overtaken by the disadvantages and where the optimum is exceeded. The potential impact on UK newsprint furnish is discussed and will be reviewed in some detail in Phase 2.

Case Studies and Print Trials

There are significant opportunities to increase the use of recycled content papers in the magazine industry. A key objective of this Phase One report was to identify areas that are particularly able to use recycled content papers and propose relevant case studies and print trials for Phase 2 to provide the necessary information to encourage increased use. The proposed case studies and print trials are detailed within the report and summarised below.

The purpose of print trials in Phase Two of the project is to collect both technical and cost information to demonstrate practical use of recycled magazine papers and effect a significant procurement pattern change. The resulting data should give publishers and printers the necessary information and confidence to specify the use of papers with recycled content.

The range of case studies proposed will provide a perspective on the decision making processes and practical issues surrounding the choice and regular use of recycled content papers across a number of magazine criteria. A mix of case studies covering the full range of appropriate grades of paper will provide the necessary coverage.

The practical print trials will be conducted from a selection of six web and sheetfed scenarios that are typical of the consumer and B2B market categories. In addition, a seventh case study covering newspaper supplements will be included so as to benefit from the already available relevant experience of recycled content papers in this sector. These trials will encompass the entire production workflow from proofing and printing through to finishing and cover-mounting processes. This should provide comprehensive coverage of the entire production process.

Proposed Case Studies

- Case Study One – An example of a magazine with substantial experience of using recycled content paper
- Case Study Two – Membership Based Organisation or High Profile ENGO's magazine
- Case Study Three – High Volume Consumer Magazine
- Case Study Four – Local or Regional Magazine
- Case Study Five – Customer Magazine
- Case Study Six – B2B printed by Sheetfed Offset Lithography
- Case Study Seven – Newspaper supplements (broadsheet and tabloid)

Proposed Practical Printing Trials

- Trial One – B2B Sheetfed
- Trial Two – Consumer Heatset Web Offset
- Trial Three – Children's Magazine, Heatset Web Offset
- Trial Four – Local Government / Regional Development Magazine, Heatset Web Offset or Sheetfed Offset
- Trial Five – Gravure-printed consumer magazine
- Trial Six – Newspaper supplements (broad sheet)

The number of print trials will depend on the number and range of publishers wishing to be involved and the budget available to cover trial specific costs.

Next steps

Following publication of the report a request for tender will be published by WRAP for consultants to run phase 2 of the project. In parallel the magazine publishers and other parties will be approached to identify case studies and those interested in being involved in practical print trials.

The steering team made up from PPA, Magazine publishers, Mills etc. will continue to oversee the project. The final report will primarily be a collection of case studies with a summary highlighting key findings and conclusions.

Having carefully considered the range of magazine sectors, the following were found to have a particularly large number of titles that appeared appropriate for recycled content papers: Pre-school, Teenage, Leisure, Buying and Selling, Countryside and County, TV Listings and Women's Interest. This is a gross generalisation, intended only to provide rough guidance. All sectors contain some publications that currently use virgin papers but could have recycled content. Likewise most sectors also include publications for which recycled papers are not available to meet their fitness-for-use criteria.

2 Objective

The objective of this work is the demonstration to decision makers and influencers in the magazine publishing and printing industries the opportunities for successfully using recycled content papers in magazine production. The aim is to give publishers and printers the confidence to move to recycled content papers, where it is appropriate to do so, by providing information on suitable applications, paper availability, paper performance and print performance.

3 Scope

This project is being undertaken in two phases;

3.1 Phase One

Phase one consists of this report, containing background information and a discussion of the opportunities and barriers to the increased use of recycled content papers in magazines. Phase one also includes a proposal for the structure of the practical elements for Phase Two.

Newspaper supplements have not been addressed within the analysis undertaken for this report. However, the conclusions drawn and the recommendations made will be applicable to the supplement sector where the paper grades, product quality and printing processes are similar to the categories included here. It is recognised that the newspaper supplement sector represents a significant proportion of the total magazine paper tonnage used in the UK.

3.2 Phase Two

Phase two is a practical phase that is being designed to provide the following information:

- What are the advantages/disadvantages of using recycled content papers
- What practical measures are available to mitigate any disadvantages with recycled paper
- Identification of potential case studies
- Provide an assessment of any risk factors associated with a change in paper
- A range of case studies including:
 - Paper & printing details
 - Print performance details relative to virgin (speeds, yields, web washes etc)
 - Commentary on set-ups/adjustments
 - Finished copy assessment/comparison with virgin
- Final report (including full trial details)
- Summary report for industry circulation
- Summary presentation for industry

4 Key findings

4.1 What papers are available that incorporate recycled content?

A wide selection of printings and writings papers has been identified that incorporate a recycled content and may deliver properties suitable for the printing of magazines. Grammages available vary from very high - as high as 350gsm, to as low as 45gsm. Generally the recycled papers available are biased towards high recycled content. Just over half of the papers identified were at 100% recycled and two thirds above 75%.

A range of recycled content paper quantities were found. Shade varied from equivalent to a typical virgin sheet to those equivalent to a low quality virgin sheet. Papers covered SC, LWC and MWC. The highest quality papers often seen in glossy lifestyle magazines did not have a recycled content equivalent at the time of writing.

The papers available are summarised in Appendix Two. These exclude "improved newsprint" types as used in puzzle and crossword magazines. The table has been compiled from readily available information from the suppliers' web-sites and other published sources.

The total recycled content material available from EU paper mills for all applications using these grades (not just magazines) is in excess of 5,000,000 tonnes¹. There is also additional mill capacity that is not being utilised fully. This suggests that availability of material should not be a barrier to the use of recycled content papers for magazines, where the papers offered are suitable for the quality requirements of the end use application (fit for purpose). Generally printers and publishers already using recycled grades did not report any difficulties in sourcing sufficient quantities of recycled content papers. There were a few minor exceptions to this but these predominantly related to paper mills supplying very small "one-off" orders, which would be problematic whether supplying virgin or recycled grades.

The papers identified here are suitable for sheetfed or web offset although there are an increasing number of recycled fibre magazine papers available that are targeted at the gravure market.

Global paper manufacturers champion the cause of sustainable fibre supply, an approach that combines certified forest schemes, chain of custody and the use of recycled fibre. Current marketing strategy focuses on promoting specific brands and not advertising the links between brands and individual mills. This allows a degree of production flexibility to accommodate increased demand for a particular brand. However, this can also discourage making recycled content claims because only certain mills have the necessary facilities to produce recycled content papers and mill groups may try to maintain flexibility of production location rather than making a recycled content claim and limiting production options.

Large paper manufacturers do not externally advertise papers from individual mills, which in turn does not focus attention specifically on the recycled content, as content may differ between mills.

If a paper maker has both virgin fibre products and recycled fibre products both suitable for the same market sector e.g. magazine grades, there can be reluctance to promote one against the other as there is little benefit to the group as a whole and may create conflict. However, in the event of stated customer demand most manufacturers are able to offer a recycled option albeit limited for some.

4.2 What products are already printed on recycled papers, and why?

Publications from a wide variety of magazine categories were identified as printed on recycled content papers. Examples included:

- Membership magazines printed for an environmentally conscious membership base
- Customer magazines where an ethical image is portrayed by the company
- Government and local authority publications driven by environmental awareness and government targets
- Consumer titles using papers such as SC/LWC as opposed to MWC/HWC etc
- Special interest and business magazines where content and a low paper price are of prime importance rather than paper or print quality and where advertising reproduction quality is less important

¹ Source: Interviews with European paper mills undertaken specifically for this project

- Examples where the recycled content paper characteristic (higher opacity), due to the design style of the magazine, provided unexpected additional benefits over the environmentally responsible reasons for which the publisher had chosen the paper.
- Puzzle and crossword magazines that are printed on lower cost “improved newsprint” rather than P&W papers.
- In addition, a significant proportion of newspaper supplements are also printed on recycled content LWC and improved newsprint.
- Budget “gossip” magazines where paper price is critical

Putting an exact figure on the proportion of UK magazines printed on recycled content papers is not easy. Previous estimates have suggested 2% or less and estimates of 1% - 3% from this project support the previous findings.

Whilst there is a perception that more recycled content papers are used for magazine publishing in Europe, this was not supported by the figures and comments provided by our contact with mainland European printers.

4.3 What existing experiences do printers have?

All magazine printers contacted during the research have had some experience of printing on recycled content magazine papers. These included some of the most prominent magazine printers namely Polestar, Roto Smeets, St Ives, Southernprint and Stephens & George. These companies have annual paper consumption in excess of 1 million tonnes, of which approximately 1.5% contains recycled content. It was acknowledged that in the past papers containing recycled fibres have caused some difficulties (increased incidence of web breaks or poor final quality product). However, it was the general consensus that these difficulties have been resolved and today these papers present no more of a challenge than equivalent, virgin papers.

4.4 What existing experiences do publishers have?

Perhaps due to historical experiences many publishers assume that recycled content papers will be of lower quality than equivalent virgin papers. However a number of technical advancements have been made in recent years and availability of recycled papers which are comparable to virgin papers is increasing.

At the lower end of the spectrums of both quality and cost, equivalent SC and LWC papers with recycled content are readily available. Whereas, MWC and HWC papers with recycled content at equivalent quality and cost are more difficult to obtain, although they are available. It is necessary to match availability with “fitness for purpose” when using papers with recycled content.

Publishers who have used recycled papers that meet their performance requirements have no specific concerns about using them more widely when the opportunity arises. Some publishers had no experience of using recycled grades or had trialled papers several years ago and been put off by problems the paper caused during press operations and dissatisfaction with the general quality of the finished product related specifically to the paper. Although they would be willing to look at recycled content papers now, these publishers indicated that they would like more reassurance and information as to the end results that could be achieved before investing time and money into trials. A small proportion of publishers contacted for this project (approximately 20%) indicated that they would expect resistance from printers, or that they did not expect any recycled content papers to be available to meet their product requirements. Publishers admitted they had not investigated the current situation regarding papers with recycled content and they recognised their own lack of knowledge and understanding of what RCF papers were available and what experience printers had of using them.

For many publishers a more important focus than recycled content is the source of virgin fibres. They expressed a preference for Forest Stewardship Council certified (FSC) or Pan-European Forest Certification (PEFC) approved papers and most of them check the environmental credentials of their printers and paper suppliers (e.g. whether they have environmental policies or not). The focus on virgin fibre sources probably reflects the current pressures from ENGOs and their lobbying of publishers on this issue. Responses from printers have also indicated that they do not see the use of recycled fibre as an important additional issue because the focus of concern presented to them, in the past, has been related to the sustainability of the fibre source, not the disposal of the used product. The issue of reducing the amount of paper that is landfilled tends to be seen in terms of increased collection rather than using purchasing drivers for increasing the manufacture of recycled papers. This is based on the assumption that there will be ever expanding demand for the collected magazines primarily in recycled newspaper production.

4.5 How are magazine papers selected?

The detail of the process of selecting papers varies from publisher to publisher but typically, individuals, responsible for their own group of publications, will make decisions on the branding of their magazines. Their decisions are based on their requirements for the look, feel, finish, weight, opacity, brightness and final size of the product. These individuals are (generally) non-technical in their approach to paper specification. They will present a number of competing magazines or current titles to the production department and say what they do, or do not, like about the papers. For example, the publisher might like the “feel” of the paper used for a certain magazine but want a brighter finish for their own product. The production department will then source a number of papers that meet, or closely match, the publisher’s preferences, including cost considerations. Rarely will a publisher specifically ask the production department to source recycled content papers. Once the production department has sourced the papers, further discussions will be held with the publisher. An iterative process may follow, with further papers being found on the basis of feedback, until a final decision can be made.

In most cases, cost and quality issues dominate the decisions only then followed by print production concerns. For particularly price sensitive work, paper cost may overrule everything else, especially as the paper will account for 35% - 45% of the printing costs. For a large magazine publisher, averaging the spend over their full range of titles, their printing plus paper plus repro cost represent a third of the total cost base. This translates into approximately 13.5% of the total publishing cost is the paper. But because the “one third” is averaged across both B2B and consumer titles it is only a guide. For example the print, paper and repro costs for a short-run B2B magazine would have a very different proportional breakdown than those for a long-run consumer weekly. It might be argued that the short-run B2B will be less sensitive to paper price than the long-run consumer title as paper will be a smaller proportion of their total cost. However, it should also be recognised that the paper, printing and repro costs are all highly visible external charges and all publishers will focus closely on keeping them as low as they can. B2B publishers, when choosing paper, will consider the impact their choice may have on distribution costs; B2B publishers are more sensitive to paper weight increases than consumer magazine publishers because consumer magazines have a higher percentage of newstrade copies so do not rely on mailing for distribution. B2B publishers tend to distribute predominantly through the mail.

4.6 Which categories of magazines would be *particularly* appropriate for using recycled content papers?

The magazine sector encompasses a wide range of customer markets, printing processes (sheetfed offset, web offset and gravure) and paper grades (SC, LWC etc). The diversity of the industry is shown in the market data presented in Section 5.7. This diversity means that there are a high number of potential opportunities to use papers with recycled content. A purpose of this work is to identify where conversion to recycled content paper would be particularly appropriate within the UK.

Based on an analysis of the UK B2B and consumer magazine publishing sectors by number of titles and circulation size, the proportion of magazines, at the current time, likely to be suitable for each of the main printing processes has been determined and are detailed in Section 5.7.

Within each sector, different categories of magazines have been identified. Considering the various papers available, their fitness for purpose and their likely physical properties, these have been matched to the printing processes for which they might prove suitable. Within these, categories of magazines for which available recycled content papers are likely to meet the required paper specifications have been identified.

In the consumer sector, web offset is the dominant printing process (see Figure 5) and therefore also represents the best opportunity in terms of impact (tonnes of paper). The consultants estimate that there are approximately 160,000t of product in this sector for which a high or medium to high proportion of titles may be particularly able to make use of recycled content papers. In addition there are a further 14,000t of product in this sector for which a medium proportion of titles may be particularly able to make use of recycled content papers.

Magazines within these categories have a wide range of circulation volume and a diverse target audience. Some titles are already printed on recycled papers. Using this as a benchmark together with providing conclusive print trial evidence to support it, should provide the catalyst for increased use within the sector. It is not necessarily the case that all of the magazines in these categories will be suitable for recycled content, but good case studies and trials will be identifiable for further investigation within these categories.

Overall, the B2B sector is dominated by sheetfed offset (see Figure 1). However, as a rule, sheetfed magazine printing does not use energy drying of the inks for the bulk of the printing, exceptions may be some covers and

varnishes. In interviews for this project one major UK sheetfed printer reported a problem with drying times using recycled content paper (see section 5.5). As other printers did not raise this, it is important that the trials in Phase Two are designed to investigate the validity of this concern.

The consultants believe the best immediate opportunities in terms of technical feasibility are in the heatset, web offset market. There are a number of papers available for this sector. The consultants estimate that in the B2B sector there are approximately 17,000t of web offset product of which a proportion of titles will be able to make use of recycled content papers.

These figures have been calculated from available circulation data (ABC figures) which do not include circulation data for local authority and other government magazines. These publications, some of which will also be printed by web offset, may also be appropriate for using recycled content papers. Government recycling targets provide an additional driver for this market and these could provide valuable case study/trial material. These publications conform to all the usual production criteria for commercial magazines, but have the added benefit that there is usually no publisher intervention, low key advertiser involvement and no cover price. Therefore this sector is a low risk for print trials and has no obvious reason for not increasing its use of recycled papers. However, the factors that make case studies and trials easier in this area are also likely to reduce the perceived strength of them. The main barriers to increasing the use of recycled paper in this sector will be lack of awareness and insufficient technical information to specify recycled brands.

Although potential market sectors have been identified, the results of the trials will dictate the sectors and titles that will be most applicable to increase general usage. Comprehensive trials will consider and highlight all technical aspects - possible examples being UV varnishing, sealing, laminating, cover mounting etc. All these areas need to have trials conducted and the resulting data will provide a clear indication as to the magazine sectors that should be targeted in a campaign to raise awareness and subsequently increase usage.

In addition to web offset, there will be opportunities in the sheetfed and gravure sectors but these may prove to be more challenging and higher risk. The sheetfed sector represents >30% of the consumer magazine market and should not be overlooked. For gravure, which currently represents only a small fraction of the UK magazine printing market, many consumer titles will be appropriate but the higher volumes will give a higher risk in terms of tonnage and, for some titles, customer acceptance may be an issue. However, in view of the recent investment in UK gravure and the projected growth of the UK's gravure printed magazine output, this area should be considered as suitable for a practical trial.

4.7 Does using recycled content paper provide a marketing advantage for publishers?

Without doubt there is an increasing awareness of environmental issues within the printing and publishing industries as there is across the magazine reading, general public. For some publications with an environmentally conscious target market, printing on recycled grades is already normal practice. Paper suppliers have indicated that these publishers, those who have chosen to "go recycled", have not done so for cost savings but have made the choice for environmentally responsible reasons. The energy for change is generated by the publishers' recognition of the issues rather than the message coming back from the readers. However, for magazines whose content have no direct connection with environmental topics there was little evidence from publishers that pressure is currently being exerted by readers, and no pressure from advertisers, to move away from virgin fibre.

Currently the importance of paper makers using fibre from sustainable forests has a much higher profile, for publishers and printers, than the environmental value of recycling. Whilst using paper from sustainable forests may not be described as a particular magazines "marketing advantage" it does clearly respond to the pressure from the ENGO's as discussed in section 4.4. The use of recycled paper, by its nature, negates forest management concerns whilst also dealing with the end disposal issues, however, currently there is little significant direct pressure by ENGO's to respond in this way.

4.8 What are the cost implications of using recycled content papers?

Publishers and printers expressed mixed views on this subject. The cost of recycled content paper has traditionally been on a par with virgin stock for lower grades and the general consensus suggests that the higher quality grades can differ in price between -5% to +5. However, one respondent expressed the opinion that for a heavier weight, gloss coated recycled content paper, which was similar to a "top grade woodfree", the cost could be up to 20% more.

Leipa make no price distinction between their virgin and recycled LWC. With paper cost, a direct comparison is difficult in view of the difference in technical properties between stocks. However, it has been suggested that a

saving of between 2% to 4% is a realistic expectation when moving to recycled paper. This is most relevant to the SC grades, which tend to be ordered in large quantities, which can have a significant effect on the budgeted cost of an individual publication.

The range of heavier weight coated recycled content papers has increased in the last 12 months. This increased range, some with lower levels of recycled content, has provided more price competition and price parity with virgin papers.

The weight of magazine paper is critical because distribution costs are related directly to the weight of the "package" being sent. If a recycled paper has the right "feel", brightness, opacity, stiffness, printability and runnability characteristics, costs no more than virgin fibre paper but weighed more, this would reduce the likelihood of it being chosen. To put that point more succinctly, if to maintain the magazine's printed quality meant choosing a stock with a higher grammage, even if all other factors were equal, the additional distribution costs could be unacceptable.

The Royal Mail's Pricing in Proportion proposals (PIP), possibly being implemented in April 2006, describe a new pricing system that takes into account both the weight and the size of the item being posted. Whilst magazine publishers have a number of concerns about the proposals, for example the base price for the large letter and A3 format categories is higher than the existing weight-based straight-line pricing system, for lower weight magazines, up to 250 grams, there is a price plateau. In fact from approximately 200g to 420g the postal cost will be lower than current rates for items falling into the large letter category. At weights greater than 420g the postal costs become higher and rise more quickly than at present. This means that magazines in the 0 to 250g range, under the PIP postal pricing structure, will be less cost sensitive to paper weight increases. However, for magazines whose total weight is already approaching 420g they will be more sensitive to weight increases. It should be noted that most of the heaviest magazines are in the high quality, lifestyle category and, at the moment, there is not a suitable recycled paper for this category.

The magazine categories identified in this work as having a high proportion of titles that are likely to be able to make use of recycled content papers have a diverse range of formats and styles. Whilst some products may gain from PIP, others will experience higher distribution costs regardless of whether the paper chosen is virgin fibre based or contains recycled content.

4.9 What are the implications for UK paper mills if more recycled content magazines are published in the UK?

This question has been identified for further examination in Phase Two of this project to ensure that any conclusions drawn are applicable across all of the UK newsprint mills.

5 Supporting data and information

5.1 Current situation and baseline

5.1.1 What is the issue?

In the UK we produce enough waste to fill the Albert Hall every two hours, or to put it another way, enough waste to fill Lake Windermere every eight months (source: wastewatch.org.uk). Existing landfill void space is being rapidly depleted and this is especially acute in the South and Wales. By way of example, a report by the National Audit Office Wales stated "On current trends and assuming a best case scenario, existing landfill capacity will be exhausted before 2010"². More landfill void space can be opened up but the point is that there are better ways of solving this problem.

Across Europe this challenge has been recognised with all national Governments responding to tackle the issue. In May 2000 when the UK recycling / compost rate was 9% the UK the government set municipal waste diversion targets. An initial DEFRA assessment of 2004 performance indicates recycling / composting rate of around 23%. In the same year, however, we landfilled more than five millions tonnes of paper. A further

² ENVIRONMENT AGENCY WALES: REGULATION OF WASTE MANAGEMENT Report by Auditor General for Wales, presented to the National Assembly on 28 October 2004

consequence of landfill is the paper degrades aerobically giving off methane a powerful global warming gas as well as being an obvious waste of a valuable resource.

Recovered paper and board collection is increasing across Europe. In the UK, this increase has been particularly marked over the last few years and with domestic use of recovered fibre remaining static, exports have risen from just over 500,000 tonnes/yr in 2000 to almost 2.6 million tonnes/yr in 2004. This increase in diversion from landfill is rapid, significant and ongoing.

5.1.2 Why recycle?

There is growing recognition that simply burying waste is not a sustainable approach in the long term. Certainly, when it comes to paper waste, landfilling is acknowledged as being the worst disposal option and some form of recycling the most desirable. Most life cycle analysis studies carried out on paper support this conclusion [see Appendix Four and also "Review of existing LCA studies on the recycling and disposal of paper and cardboard" by the European Topic Centre on Waste and Material Flows. 21 April 2004. <http://waste.eionet.eu.int/publications/Working%20papers/LCA>]

To put the discussion in context, it is not a question of 'sustainable forestry' or 'recycling', but of combining these two to deliver the maximum environmental benefit. Where virgin fibre is used, sustainable forestry is necessary. However, when it comes to paper and board waste, recycling provides an economic and resource efficient alternative to landfill.

Whilst the collection and reprocessing of magazine publishing process wastes (such as unsolds) is efficient and initiatives are in place to increase post-consumer magazine recycling, this project is to explore the scope to increase the proportion of recycled fibre used by magazine publishing.

5.1.3 Why buy recycled content papers?

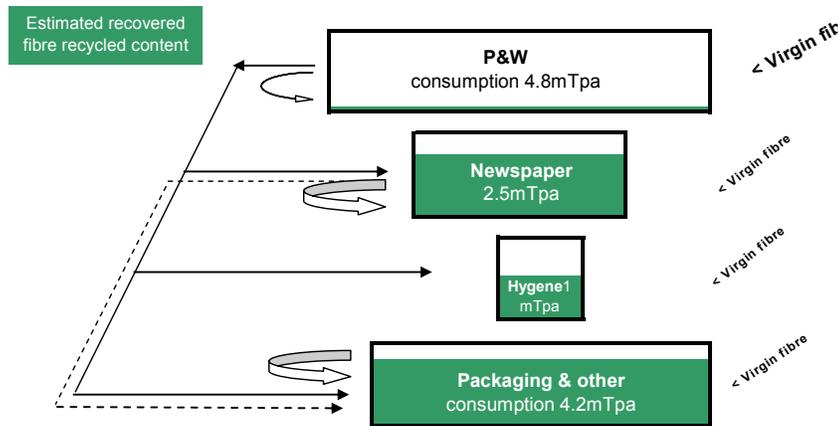
Although the UK currently recycles approximately 7 million tonnes of paper and board, over 5 million tonnes still ends up being landfilled or incinerated. It is estimated that over half of this is graphics and business papers that have a high recycling value. All too often, however, the collection of waste paper for reprocessing is considered to be the beginning and end of the recycling effort. The need to build markets for the recovered material gets forgotten.

5.1.4 Why recycled content magazines?

Europe, and the UK in particular, has a high utilisation rate for recovered fibre in the newsprint, packaging and tissue sectors. However, the recycled content level in consumed Printings and Writings (P&W) is particularly low. To date, the overall fibre flow has benefited from this. P&W provides an important component of the recycled newsprint furnish providing "new" fibres. Recovered P&W papers are also used in fluting & chipboard manufacture (as mixed papers), and tissue (as lightly printed papers). The concern is that, as recovery increases generally – and particularly in P&W, the fibre "collection" and "use" across the UK and EU will not balance. Significantly more P&W will become available than can be used in the above sectors, generating a significant surplus of recovered P&W papers.

The problem can be simplistically illustrated by the UK P&W consumption, which in 2004 was 4.8 mtpa. Newsprint consumption, the largest user of recovered P&W fibre, was only 2.5mtpa (with P&W making up approximately 40% of the furnish). In order for the fibre flow to balance it will be necessary to find additional uses of recovered P&W papers. The highest value use is to convert a proportion back into recycled P&W papers. Considering the projected recovery rates and yield losses amongst other factors the picture is not stark as the bare numbers suggest, but the increasing imbalance still needs addressing. Magazines represent 1Mt of the 4.8Mt of P&W paper consumed in the UK. Appropriate grades of magazine papers form part of the solution to the landfill problem.

Recycling "pyramid" using 2004 UK consumption data



Estimated from CPI and CEPI data

5.1.5 Recycled content paper purchase promotion

Working to divert waste from landfill and create stable and healthy markets for recycled materials and products, WRAP's market development programs target every level of the supply chain. Within the Paper Program, this opportunity in the P&W sector has provided the focus for a number of activities aimed at increasing the collection and recycling of P&W paper waste and stimulating consumer demand for recycled content P&W papers in the UK.

To increase recycled P&W manufacturing capacity, WRAP is currently considering running a capital grant competition (subject to EU State Aids clearance) in 2006. Operating in the same way as other open tender competitions run by WRAP, this could provide funding of up to 30% of the total project cost for successful proposals.

Meanwhile, to ensure that the supply of recovered P&W papers continues to rise, a study aimed at improving the access that SMEs have to recycling collections is also soon to be underway and paper waste from offices and business will be one of the key materials under consideration.

To close the loop, WRAP's 8 person national Recycled Paper Advocacy Team was set up in June 2005 year to stimulate consumer demand for recycled content office and business printing papers. It addresses the main barriers to increased uptake of recycled content papers, including outdated concerns about quality, performance, price and the lack of awareness of the choice of recycled content P&W papers available. It also works to promote the understanding that specification of these papers boosts market demand, which in turn promotes more cost-effective office collections and diverts waste from landfill.

Finally, this recycled content magazine project is aimed at providing the information and practical case studies for the magazine industry to encourage greater use of fit-for-purpose recycled content papers in this significant sector.

5.1.6 Is there a limit to the average recycled content for P&W papers?

As discussed above, P&W papers, including magazines, are used in the production of many different paper products including newspapers, tissue and corrugated flutings. Paper fibres themselves can only be recycled 5 or 6 times so these products, which typically have very high levels of recycled content, require new fibres to be introduced from different sources such as P&W to maintain the fibre flow. As such there will be an economic and technical optimum level of recycled fibre in P&W as a whole. Exceeding this limit could mean that the quality of furnish available for other recycled paper production could be undermined. The newsprint furnish issue is described in more detail in section 5.11.

Currently, magazine publishing in the UK consumes in the region of 1 million tonnes of paper per annum. Only a small fraction of this paper contains any recycled content, which means that an even smaller proportion of the fibre used in magazine publishing is of recycled origin. There is significant scope to increase the amount of recycled content magazine paper used before the fibre flow approaches the point when the benefits of increased recycled content is overtaken by the disadvantages and where the optimum is exceeded.

5.1.7 Is recycled content paper just a trend?

Past environmental trends have come and gone. In this case, the base motivation is very different. The move away from a reliance on landfill will only gain more momentum in the future, as will the number of new generation recycled content papers that can meet the necessary quality requirements, as well as the demands of modern high-speed printing and finishing equipment, without costing more.

The surplus of recovered P&W materials also represents a significant raw material opportunity for use in appropriate P&W sectors. Some are already taking advantage of the opportunities. The latest generation of recycled content papers available today is effectively indistinguishable from the virgin equivalent, and demand is rising.

In the UK, a key driver is the government's sustainability strategy, in which 'buying recycled' has been identified as a priority. Also, with the growth in emphasis on CSR (corporate social responsibility), major corporations are increasingly adopting more sustainable procurement practices and are recognizing the opportunity to 'close the loop' by recycling office paper and specifying recycled content paper for the office and for printed publications

5.2 Baseline

Two approaches have been used in an attempt to establish the proportion of papers used for magazine publishing in the UK that currently include a recycled content.

Firstly, magazine publishers, responding to a written questionnaire, were asked to identify the tonnage of paper they consumed last year, and to highlight publications printed on recycled content papers. The total paper consumption of the eleven publishers responding to the questionnaire was 159,000 tonnes (representing approximately 17% of the total paper consumed by the UK magazines publishing sector by weight). The respondents to this confidential questionnaire included some of the largest consumer, B2B and customer magazine publishers in the UK but it also included some smaller publishers too. All categories of magazines are represented within the portfolios of the responding companies. Of the ten publishers, only two were currently using recycled content papers. These publishers did not identify the tonnage of paper being used but, based on circulation figures, the tonnage of paper involved is estimated to be just 600 tonnes. On this basis, the proportion of recycled content papers being used by these publishers represents 0.36% of the total. However, the sample of responding magazine publishers excluded some key publications known to consultants to be published on recycled content papers. Factoring these in suggests that the proportion of recycled content magazines published in the UK is more likely to be in the region 1-3%.

Secondly, five leading magazine printers in the UK were asked what proportion of the magazines papers they were using each year were recycled content. Three of these printers provided quite specific values. These worked out at 0.08% of paper consumed, 0.35% and 1.5%. Quantities of recycled content paper involved ranged from just 25 tonnes to 3000 tonnes. A fourth printer was unsure of exact quantities involved, but estimated "less than 10%" of their throughput of magazines, although the consultants expect that this estimate is optimistic. The final printer could not provide specific numbers. Some printers pointed out that in many cases they use paper supplied by the publishers, and would not always necessarily know if there was a recycled content or not.

Surprisingly, figures reported by European printers were not considerably higher than those of UK printers. Of the European printers interviewed, two could provide details of the quantities of recycled content papers used as a proportion of their total throughput. The larger printer was using in the region of 7,000 tonnes, which they estimated to represent 2.5% of their throughput although this increased to nearly 17% when improved newsprint was also considered. In the experience of this printer, the amount being printed on recycled content papers for the UK market is no different to that from other European countries. The second of these printers was using around 5000 tonnes of recycled content magazine papers, which they estimated as "less than 1%" of their throughput.

An overview of the range of papers available has been prepared in Appendix Two. Whilst the table is as complete as the consultants can make it, it is not presented as a definitive list of all the products that are available. Technical details have been included where they have been readily available from the manufacturers' published data. It can be seen from Table 4 that papers are available at weights spanning the range of 45gsm to 350gsm, with more than one choice of supplier at most weights. Many are also available in a choice of surface finishes.

5.3 Examples of magazines currently produced on recycled content

UK publishers and printers were able to identify a diverse range of magazine products currently being printed on recycled content papers, for a variety of reasons. Examples included:

Magazines with a membership-base, for example the National Trust magazine (printed on Forest VGreen Silk 80gsm which is made from 100% post-consumer waste); GreenPeace magazine; magazines for wildlife trusts and bird-watching magazines (on Cyclus Print, Cyclus offset, Evolution, Revive). For these magazines, the readers expect to see a traditional recycled look to the product. In some cases, the quality of recycled papers can be too good for the targeted look and feel (branding) of these magazines, as good quality recycled content magazines do not look recycled enough.

Similarly, some customer magazines where an ethical approach is expected, also make use of recycled content papers. An example was given of the Co-Op Financial Services customer magazine Change, which fits this category. In addition, some utility companies also publish their customer magazines on recycled grades e.g. PowerGen

Several UK printers reported that they produce government / local authority magazines on recycled content papers (typically on 'Character Bulky' from Steinbeis Paper Mill in Germany, Greencoat from Marchie in Italy, and RePrint & Cyclus from Dalum Papir, Denmark.) The driver for recycled content in this instance tends to be local authority environmental awareness and government targets for recycled content. The larger titles in this sector tend to be printed on web offset.

The business model for puzzle and crossword magazines tends to be cost sensitive rather than quality sensitive, and therefore "improved newsprint" type papers are suitable.

Some consumer magazine titles where paper quality is not a dominant criteria for the market – examples included some low cover price gossip magazines and low cover price TV listings.

Some special interest or business magazines, where content rather than paper or print quality are key, and where advertising quality is less important (for example, VNU publish a fortnightly computer magazine on 54gsm GraphaNova from SCA Graphic Paper)

Limited examples of specialist magazines where recycled content gives an unexpected additional benefit. This example is the extreme music magazine Terrorizer, where higher opacity reduced the show through from the large areas of solid black that the page design demands. This publication is printed on VGreen silk 910mm 90gsm).

In addition, a significant proportion of newspaper supplements are also printed on recycled content LWC and improved newsprint. Although the initial driver for some of the publications was the publisher's environmental image, today, price is a major driver

Generally, European printers reported similar categories of magazines as using recycled content papers, but with some interesting differences. From one printer, super calendered grades were reported as being used for magazines the content of which focussed on environmental topics. Lightweight coated (LWC) papers were also being used for low cover price weeklies and radio & TV listings. LWC is also reported as being used for some woman's magazines, although the printer did not specify the quality and branding of these. A second printer identified general interest and high quality consumer magazines as containing recycled content, using papers from the three German suppliers of heatset web offset papers (Steinbeis, Leipa and Dalum). A magazine called "Geo" is printed on at least 33% recycled content paper, while a knitting magazine is printed on 100% recycled content.

Papers used in Europe included Character (Steinbeis), RePrint and Cyclus (Dalum), Publipress (Stora Enso), Norsk SC (Norsk Koski), LLP/LPT and SCA/SCP (Myllykoski), and UltraLux and UltraMag (Leipa).

5.4 Available recycled content magazine grade papers

There are a total of 15 mills in Europe producing magazine grade papers with a wide range of recycled fibre content from 100% recycled down to just 5%. Stora Enso has four mills, UPM has three, Steinbeis Temming and Myllykoski both have two each with SCA, Norske Skog, Burgo and Leipa all having one each. The four Stora Enso mills produce 1.5 million tons combined of SC and MF grades. Together, the others listed produce approximately 1.4 million tons of LWC with recycled fibre content.

Production of recycled content papers in Europe is increasing. A recent, European example of increased production capacity of magazine paper with recycled content is the new machine brought online at Leipa Georg Leinfelder's Schwedt mill in Brandenburg, Germany. Their paper machine PM4, with a capacity of 300,000tpy, started up at the beginning of August 2004. The machine has a width of 8.9m and has an operating speed of 1,800m/min. This provides a massive new source of recycled lightweight coated (LWC) magazine paper to be used in web offset printing. The company will be almost trebling its present capacity. GBP218m (EUR330m) has been invested in the project, with LWC magazine paper produced chiefly in the weight range of 48-65gsm. 70-

100% recovered fibre will be used in the production of the LWC grades on the new machine that will be sold mainly in Europe and North America. Major UK publishers are already discussing taking output from the new machine.

5.5 Current experience of printers

For the purposes of this research, five UK and two European printers were interviewed to ascertain their current experience and opinions on recycled content papers.

The research showed that there is a lot of experience across the magazine printing sector of working with recycled grades, but the results of their experience, though widely discussed, have not been formulated into guidelines or collated to separate the anecdotal from the proven. It was also evident that some of the opinion forming information was out of date, particularly in relation to the improvements that paper makers have introduced to the quality of recycled grades.

However, printers have little or no influence on the choice of papers used for the magazine market. The few that do try to influence the publishers' choice do so either from their own environmental standpoint or as a means by which they can expand the range of services they offer e.g. to be seen as proactively enhancing the consumers' opinion of the publisher.

All the magazine printers contacted during this project have had experience of printing on paper with recycled content and the overwhelming majority of them state that they have not identified any specific problems or increased downtime that can be attributed to the recycled content. Whilst some years ago there were problems, the consensus of opinion is that these have now been solved.

One exception to that, a sheetfed, offset printer, has experience of recycled fibre paper leading to drying difficulties and a greater tendency for damage caused by scuffing. This experience was an exception. This needs further exploration and should be investigated in Phase Two.

The point was also made, and supported by Pira staff experience, that some press operators would be unaware as to whether the paper they were using for any given job, contained 100% virgin fibre or a mix of recycled content. Their concern would be the optimisation of that specific run.

For heatset, web offset printers, there appears to be every opportunity for them to be involved in a move towards greater use of recycled fibre, as the majority of respondents reported no technical barriers and were dismissive of any potential difficulties. However, one printer's representative believed that recycled grades have lower tensile strength that will, depending on the actual press used, lead to a higher incidence of web breaks. It was also reported by the same respondent that runnability can be improved by using recycled grades for web offset because they are less bulky than virgin fibre papers and, he believes, pass through the press more easily.

In the case of sheetfed offset, alterations to the reproduction specification (reduction of total coverage value) and possible addition of drying catalysts to the inks may be necessary. The question raised about sheetfed ink drying requires closer inspection and analysis, particularly in the case of LWC where the coating, rather than the fibre mix, is likely to have a greater influence on absorbency.

No problems were reported regarding the availability of the chosen stock, although it was reported that the choices were limited, particularly at lower weights.

Amongst the printers there is a perception issue that has been identified in relation to the distinction between "environmentally friendly" and recycled. More than one source (printers) claimed that the idea that there should be competition between recycled fibre and virgin fibre, for environmental responsibility, is unjustified because most virgin fibre comes from sustainable sources. Recognition of use of fibre from sustainable sources as a major environmental issue was well understood. The problems of finding suitable sites for landfill and the greenhouse gas methane that is produced when buried paper breaks down i.e. the end disposal problems were not appreciated until specifically raised. The relationship between sustainability and recycling and the environmental benefit of recycled versus virgin fibre is not yet widely appreciated.

5.6 Current experience of publishers

Published opinion suggests that the driving force among publishers is to use the most cost effective stock that is fit for the purpose of the product, which is hardly surprising as the paper can be over 40% of the printing cost of a magazine. In 2003, many publishers took the opportunity provided by low paper prices to switch to higher quality stock, but if market uplift causes demand to outstrip supply, there could be an equal move to downgrade grades. Manufacturers are launching improved supercalendered (SC) grades that could suit downgraders switching from lightweight coated (LWC) or medium weight coated (MWC). The catalogue, retail and weekly sectors tend to use LWC while the expanding contract publishing market uses a variety of options with

high white characteristics. Monthly consumer titles pick MWC grades. In general, gloss grades are the most popular, but a niche exists for silk and matt grades for high quality publications that aim to add value through the look and feel of their final products.

The anecdotal evidence gathered for this research supports the published opinion. Eleven publishers completed questionnaires and/or were interviewed for this project. They represented a diverse cross-section of publishers, from large to small, and incorporating consumer, B2B and contract magazine titles.

The responses suggest that recycled content papers are not a priority for many publishers. The main priority for them is fitness for purpose. 80% of respondents indicated that the primary drivers when making paper decisions were centred on production issues. Minimum downtime, good run speeds and general characteristics relating to good quality print. 20% of respondents intimated that decisions were made purely in terms of cost over quality.

The detail of the process of selecting papers varies from publisher to publisher but typically, individuals, responsible for their own group of publications, will make decisions on the branding of their magazines. Their decisions are based on their requirements for the look, feel, finish, weight, opacity, brightness and final size of the product. These individuals are (generally) non-technical in their approach to paper specification. They will present a number of competing magazines or current titles to the production department and say what they do, or do not, like about the papers. For example, the publisher might like the "feel" of the paper used for a certain magazine but want a brighter finish for their own product. The production department will then source a number of papers that meet, or closely match, the publisher's preferences, including cost considerations. It is the production department's role to translate the designer's/publisher's requests into a technical specification for the paper suppliers.

Once the production department has sourced the papers, further discussions will be held with the publisher. An iterative process may follow, with further papers being found on the basis of feedback, until a final decision can be made. In most cases, cost and quality issues dominate the decisions only then followed by print production concerns. For particularly price sensitive work, paper cost may overrule everything else, especially as the paper will account for 35% - 45% of the printing costs.

For a large magazine publisher, averaging the spend over their full range of titles, their printing plus paper plus repro cost represent a third of the total cost base. This translates into approximately **13.5%** of the total publishing cost is the paper. But because the "one third" is averaged across both B2B and consumer titles it is only a guide. For example the print, paper and repro costs for a short-run B2B magazine would have a very different proportional breakdown than those for a long-run consumer weekly. It is possible that the short-run B2B may be less sensitive to paper price than the long-run consumer title as paper will be a smaller proportion of their total cost. However, it is also recognised that the paper, printing and repro costs are all highly visible external charges and all publishers will focus closely on keeping them as low as they can.

Rarely will a publisher specifically ask for the production department to source recycled content papers, and in many cases publishers had negative perceptions of recycled content papers (much more so than printers). This appears to be in part influenced by historical experiences with recycled content papers, which have now become associated in the minds of some publishers with poor quality product and printing process difficulties. Publishers are choosing the paper and making decisions about recycled content based on runnability fears and reduction in quality issues that are not borne out by the current experiences of their printers. Therefore, particularly for SC grades, for which recycled and virgin are equally priced, there is an opportunity to grow the usage of recycled content.

Publishers that formulate their purchasing policies without including recycled grades create an invisible barrier to increased use because recycled grades are ignored. Most publishers have not conducted extensive product trials and because of a historical lack of suitable grades have not yet recognised the opportunities available. There is little evidence of printers proactively suggesting grades with recycled content.

Publishers who have used recycled papers that meet their performance requirements have no specific concerns about using them more widely when the opportunity arises. Some publishers had no experience of using recycled grades or had trialed papers several years ago and been put off by problems the paper caused during press operations and dissatisfaction with the general quality of the finished product related specifically to the paper. Although they would be willing to look at recycled content papers now, these publishers indicated that they would like more reassurance and information as to the end results that could be achieved before investing time and money into trials. Some publishers have also indicated that they would expect resistance from printers, or that they did not expect any recycled content papers to be available to meet their product requirements, although in many instances they had not investigated if this was actually the case.

The high-end glossy, lifestyle magazines are dominated by premium retail brand advertising, which is almost 50% of their content³. The perception of quality and added value through the paper quality is critical to maintaining circulation and cover price. At the time of writing there is no paper available, with recycled content, that is suitable for this market, but this situation may change in the future.

Reluctance from the publishing sector to utilise the papers available even when these have the potential to fulfil the publishers quality requirements seems to stem from perceived quality issues, a lack of general understanding and no visible incentive to pioneer the use of recycled content. Virtually every printer has had some experience of production with recycled grades and their view does not marry up with the perception of the publisher. When publishers decide on grade of paper "Fit for purpose" is a phrase widely used, this usually means the most economical stock, which still looks the part. Catalogues and consumer magazines use standard lightweight coated (LWC) and super calendered (SC) products. LWC combines mechanical pulp with long cellulose fibres for greater strength and is suitable for magazines with a high advertising content. SC is an uncoated grade containing mechanical pulp and fillers. Monthly consumer titles, perfect bound speciality magazines with higher quality demands, typically use medium weight coated (MWC). Its double coat gives consistent texture, smoothness and aids high gloss printing.

For many publishers a more important focus than recycled content is the source of virgin fibres. They expressed a preference for FSC or PEFC papers and most of them check the environmental credentials of their printers and paper suppliers (i.e. whether they have environmental policies or not). The focus on virgin fibre sources probably reflects the current pressures from ENGOs. Responses from printers have also supported this concern about sustainability of virgin fibre sources as opposed to the use of recycled content.

Publishers reported little experience of pressure from readers to move to recycled content.

The importance of the paper in the value of the magazine to the reader should not however be underestimated. Continuing research by Professor Göte Nyman from the Department of Psychology at the University of Helsinki has shown that the reading experience is greatly influenced by the physical properties of the substrate. The thickness, brightness, gloss and "feel" of the magazine in the reader's hands are all relevant. The paper quality affects readers' attitudes towards the whole publication. The "feel factor" is relevant to the selection of any paper whether it is made from virgin fibre or contains recycled fibre.

5.7 Magazine categories for which currently available recycled content papers might be suitable

The information from which the following charts have been prepared is reproduced in detailed table form in Appendix Three of this report.

5.7.1 B2B Magazine Publications (Including B2B Customer magazines)

There are over 5,000 B2B titles currently being published in the UK. For the purposes of this research, data has been estimated from the 731 ABC audited publications. It is assumed that there will be an approximate 10% print wastage level which, has not been accounted for in the calculations. As can be seen from the following diagrams, the largest proportion of titles falls into the sheetfed printing category.

³ Samples collected for this study showed Vogue had 43% advertising whilst Marie Claire had 49%

Figure 1 - B2B Magazine Printing Processes

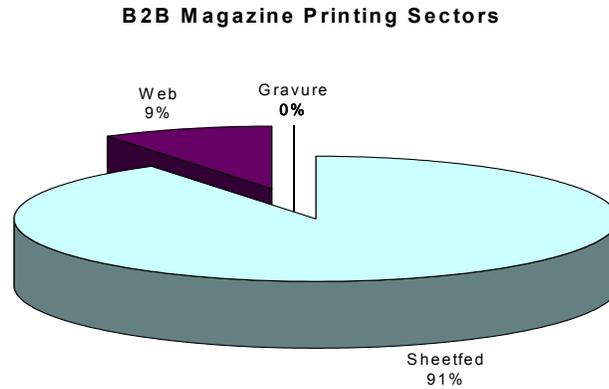


Figure 1 shows the make-up of the B2B printing sector according to the expected print process. 91% of this market uses sheetfed, offset lithography. Making up the sheetfed sector there is a wide range of magazine categories as shown in Figure 2. Similarly, for the 9% of the analysed B2B market that is printed by web offset, there is a wide range of magazine categories represented. This is shown in Figure 3.

Figure 2 - B2B Sheetfed Magazine Sector – 534 Titles

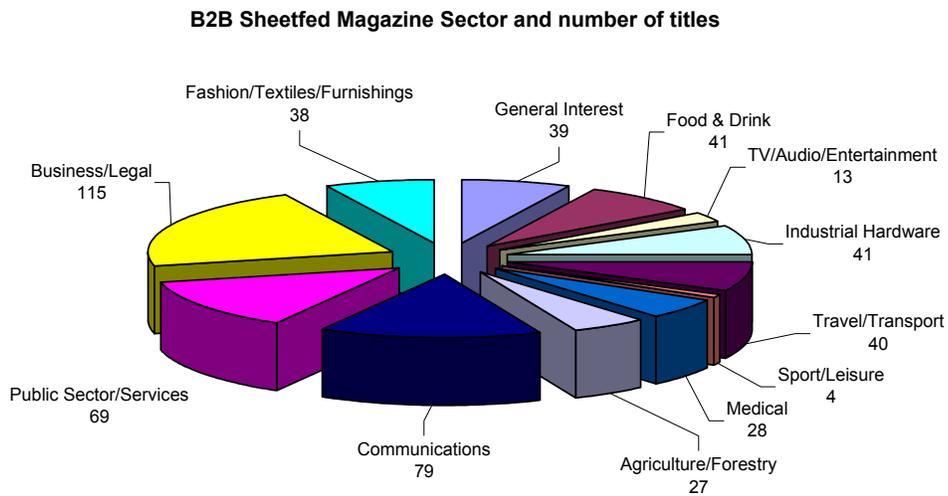


Figure 3 - B2B Web Offset Sector – 126 Titles

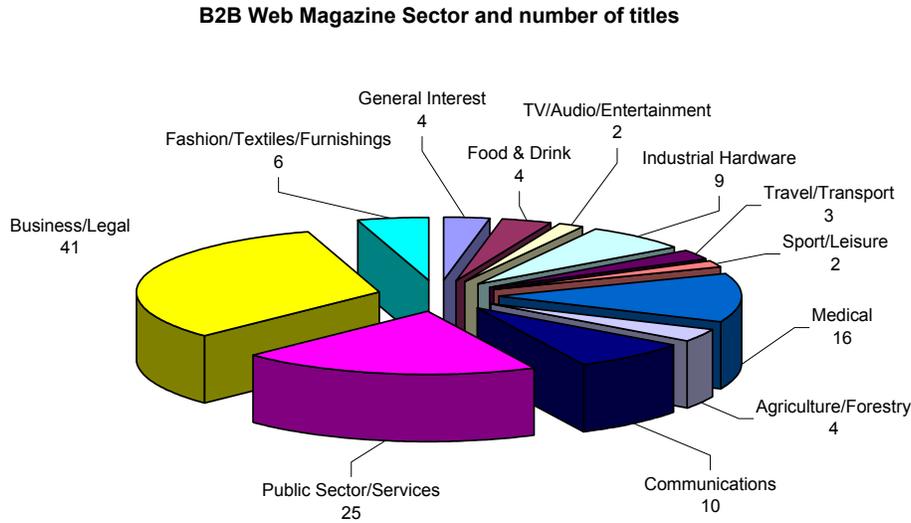
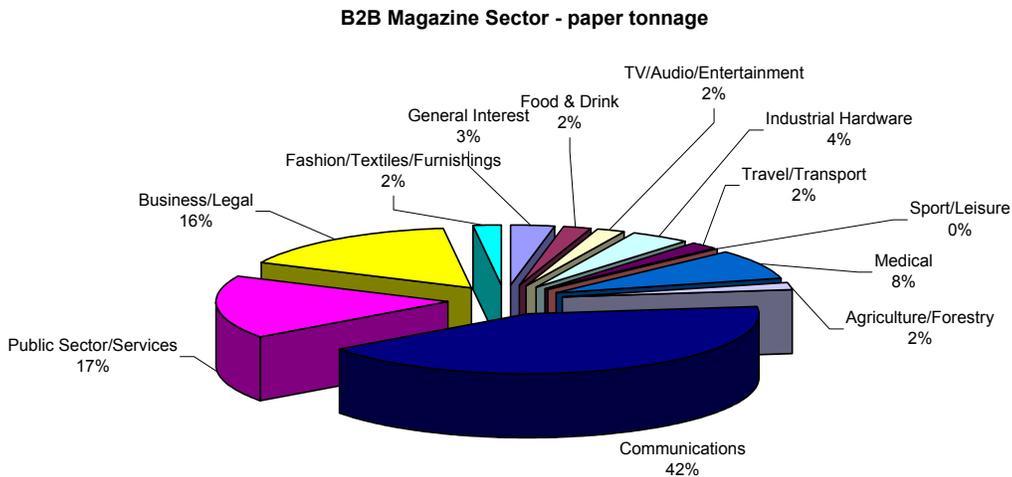


Figure 4 - B2B Magazine Sector - Paper Tonnage



The tonnage calculations in Figure 4 are based on an average of the production figure and an average weight of 300g per magazine, (arrived at, by weighing a cross section of magazine titles from this sector). In mass terms, the Communications titles are the largest category, followed by Public Sector Services and Business/Legal. The numerous remaining categories each account for less than 10% of the market by mass.

The following tables illustrate the magazine categories in the consumer and B2B market sectors. The tonnage values for both sheetfed and web offset are displayed along with the current most widely used grade of paper and an alternative recycled grade with the recycled content % available. This is to provide an indication that a similar recycled paper exists. Ultimately, whether the recycled paper is viewed as a suitable alternative will be at the individual publisher's discretion.

Table 1 – Assessment of the B2B Market and Potential for Use of Recycled Content Papers

Magazine categories	Total tonnage	Sheetfed tonnage (assumed for magazines with circulation <50,000 copies / issue)	Web offset tonnage (assumed for magazines with circulation >50,000 copies / issue)	Paper grade & grammage (most widely used within the category)	Estimated proportion of titles with recycled content option (grade/grammage & recycled content available)
Communications	29,000	22,000	7,000	LWC 60gsm – 80gsm	LWC 60gsm – 80gsm 5% - 100%
Public sector / services	11,500	5,500	6,000	SC 70gsm – 90gsm	SC 70gsm – 90gsm 25% - 100%
Business / legal	11,000	5,500	6,000	LWC 80gsm – 110gsm	LWC 80gsm – 110gsm 5% - 100%
Medical	5,500	2,000	3,500	LWC 60gsm – 80gsm	LWC 60gsm – 80gsm 5% - 100%
Industrial hardware	3,000	2,500	500	LWC 60gsm – 80gsm	LWC 60gsm – 80gsm 5% - 100%
General Interest	2,500	2,000	250	SC 70gsm – 90gsm	SC 70gsm – 90gsm 25% - 100%
Food / Drink	2,000	2,000	0	SC 70gsm – 90gsm	SC 70gsm – 90gsm 25% - 100%
Travel / transport	2,000	1,500	0	LWC 60gsm – 80gsm	LWC 60gsm – 80gsm 5% - 100%
Fashion / furnishings / textiles	1,500	1,500	0	LWC 80gsm – 110gsm	LWC 80gsm – 110gsm 5% - 100%
Agriculture / forestry	1,500	1,000	750	LWC 60gsm – 80gsm	LWC 60gsm – 80gsm 5% - 100%
TV / Audio / Entertainment	1,000	500	5000	SC 90gsm – 130gsm	SC 90gsm – 130gsm 25% - 100%
Sport / leisure	160	40	100	SC 80gsm – 110gsm	LWC 80gsm – 110gsm 25% - 100%
TOTALS	71,000	46,000	24,000		

Table 1 summarises the B2B magazine categories according to their print process, typical paper grade and tonnage used. A potentially alternative recycled grade is shown with the % of recycled content available.

5.7.2 Consumer Magazines (Including Customer Magazines)

There are approximately 3,300 consumer magazines currently being published in the UK. For the purposes of this research, data has been taken from the 736 ABC audited publications in this sector. Titles are expected to fall predominately into the web offset market, see Figure 5 but there is also a significant coverage within the sheetfed sector. It is assumed that there will be an approximate 10% print wastage level which has not been accounted for in the calculations. It is recognised that there is potential for significant use of recycled paper in newstrade supplements, but this area of manufacture is not covered within the scope of the project.

Figure 5 - Consumer Magazine Printing Processes

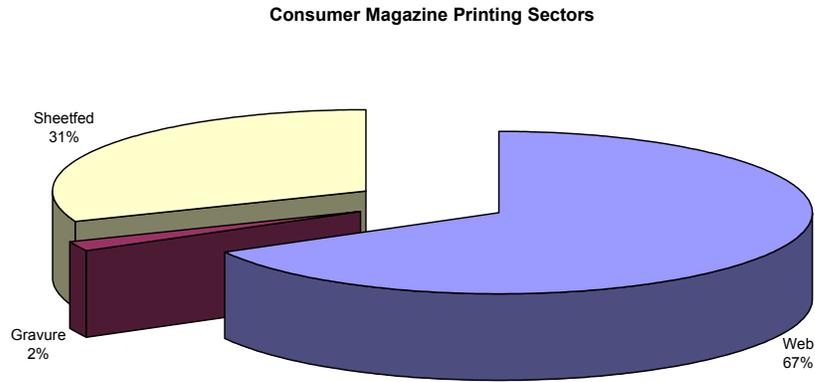


Figure 6 and Figure 7 show there is a wide coverage of magazine categories in both the sheetfed and the web offset markets.

Figure 6 - Consumer Sheetfed Sector – 198 Titles

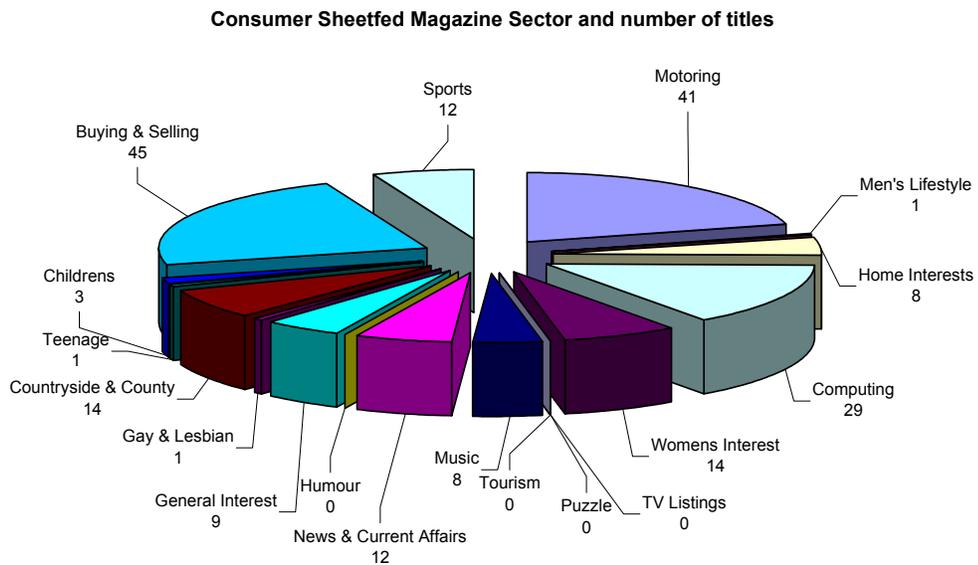


Figure 7 - Consumer Web Offset Sector – 388 Titles

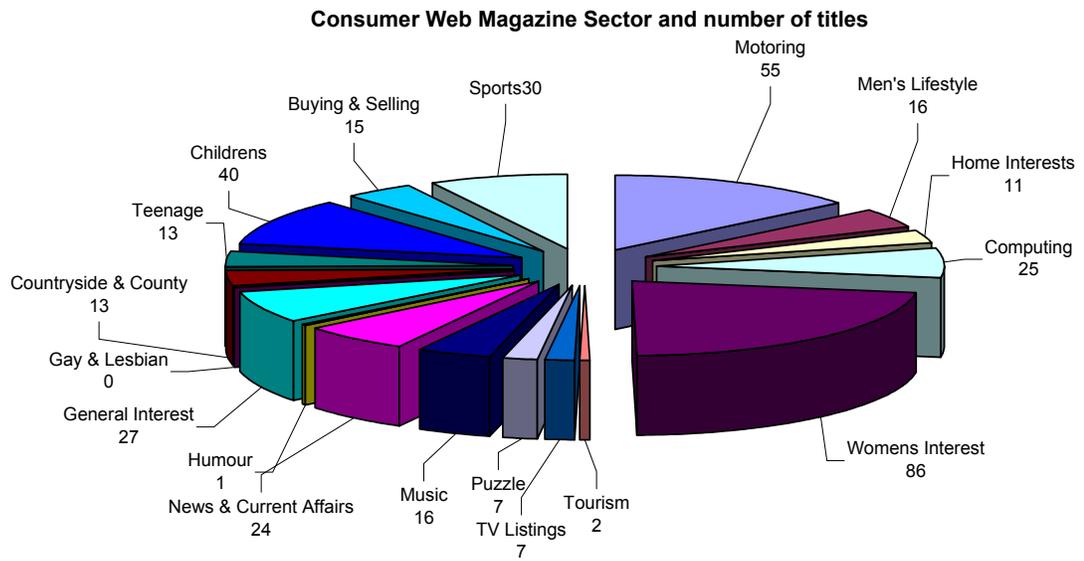
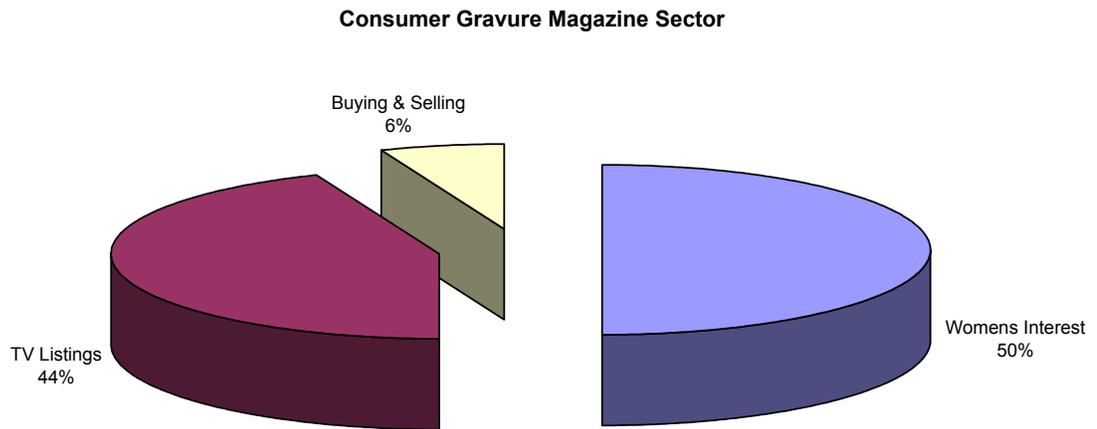
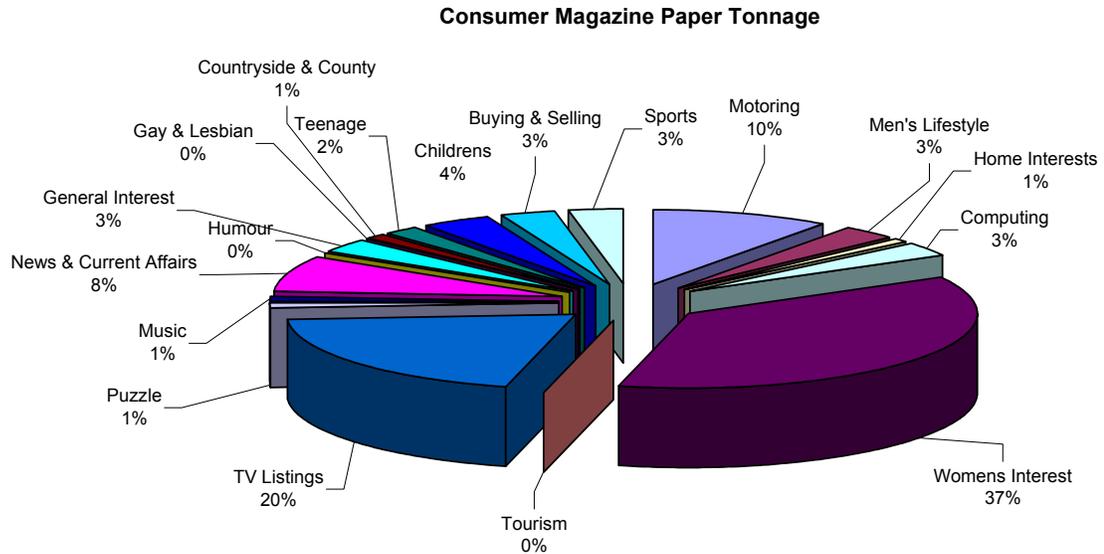


Figure 8 - Consumer Gravure Sector



The gravure market is dominated by Women's Interest and TV Listings publications

Figure 9 - Consumer Magazines, Estimate of Paper Tonnage for ABC Audited Publications



The tonnage calculations in Figure 9 are based on an average of the production figure and an average weight of 300g per magazine. The Women's Interest and TV Listings are the biggest categories together accounting for 57% of the market by mass. With the exception of Moting and News and Current Affairs, none of the remaining categories account for more than 4% of the market by mass.

Table 2 – Assessment of Consumer Magazine Market and Potential Use of Recycled Content Paper

Magazine categories	Total tonnage	Sheetfed tonnage (assumed for magazines with circulation <50,000 copies/issue)	Web offset tonnage (assumed for magazines with circulation >50,000 copies/issue)	Paper grade & grammage (most widely used within the category)	Estimated proportion of titles with recycled content option (grade/grammage & recycled content available)
Women's Interest	208,400	14,400	194,000	LWC 45 - 80gsm	LWC 45 - 80gsm 25%-100%
TV Listings	112,500	1,000	111,500	LWC 45 - 80gsm	LWC 45 - 80gsm 25%-100%
Moting	54,700	10,300	44,400	LWC 45- 80gsm	LWC 45 - 80gsm 25%-100%
Leisure Interests	27,900	7,900	20,000	MWC 80 - 115gsm	MWC 80 - 115gsm 100%
Children's	25,600	3,700	22,000	LWC 45 - 80gsm	LWC 45 - 80gsm 25%-100%
Buying & selling	19,400	10,400	9,000	LWC 45 - 80gsm	LWC 45 - 80gsm 25%-100%
General Interest	18,400	2,800	16,400	LWC 45 - 80gsm	LWC 45 - 80gsm 25%-100%
Men's Lifestyle	16,200	600	15,600	SC 52 - 80gsm	SC 52 - 80gsm 30%
Sports	16,100	10,100	6,000	MWC 80 - 115gsm	MWC 80 - 115gsm 100%
Computing	14,600	5,400	9,200	LWC 45 - 80gsm	LWC 45 - 80gsm 25%-100%

Magazine categories	Total tonnage	Sheetfed tonnage (assumed for magazines with circulation <50,000 copies/issue)	Web offset tonnage (assumed for magazines with circulation >50,000 copies/issue)	Paper grade & grammage (most widely used within the category)	Estimated proportion of titles with recycled content option (grade/grammage & recycled content available)
Teenage	9,000	30	8,970	SC 52 – 80gsm	SC 52 – 80gsm 30%
Countryside & County	8,000	2,600	5,400	MWC 80 – 115gsm	MWC 80 – 115gsm 100%
Music	7,400	2,100	5,300	LWC 45 - 80gsm	LWC 45 – 80gsm 25%-100%
Puzzle	6,200	0	6,200	SC 52 – 80gsm	SC 52 – 80gsm 30%
Home Interest	5,700	1,200	4,500	MWC 80 – 115gsm	MWC 80 – 115gsm 100%
News & Current Affairs	47,400	4,400	43,000	LWC 45 - 80gsm	LWC 45 – 80gsm 25%-100%
Humor	800	800	0	MWC 80 – 115gsm	MWC 80 – 115gsm 100%
Tourism	300	0	300	LWC 45 - 80gsm	LWC 45 – 80gsm 25%-100%
Gay and Lesbian	200	200	0	MWC 80 – 115gsm	MWC 80 – 115gsm 100%
TOTALS	598,800	77,930	527,870		

Table 2 summarises the consumer categories according to print process, typical paper grade and tonnage used. A potentially alternative recycled paper grade is shown with the % of recycled content available.

In the consumer magazine sector there are approximately 160,000t of product that are considered as having a high or medium to high proportion of titles that are likely to be suitable for recycled content papers. In addition, approximately 14,000t more are classified as having a medium proportion of titles that are likely to be suitable for recycled content papers.

5.7.3 Local Authority Publishing

The figures in Table 2 have been calculated from available circulation data (ABC figures) that do not include circulation data for local authority and other government magazines. However, many of these publications, some of which are printed by web offset, will also be appropriate for using recycled content papers. Government recycling targets provide an additional driver for this market and these could provide valuable case study / trial material.

5.7.4 Size of the Market Suitable for Recycled Content Papers

In the consumer sector, web offset is the dominant printing process (see Figure 5) and therefore also represents the best opportunity in terms of impact (tonnes of paper). The consultants estimate that there are approximately 160,000t of product in this sector for which a high or medium to high proportion of titles may be able to make particular use of recycled content papers. In addition there are a further 14,000t of product in this sector for which a medium proportion of titles may be able to make particular use of recycled content papers.

By a significant proportion, 91% to 9%, the B2B sector uses sheetfed offset (see Figure 2). However, sheetfed magazine printing relies on absorption and oxidation to dry the inks and as the printed sheets are stacked on top of each other as they are delivered from the press, rapid drying is of paramount importance. In interviews for this project one major UK sheetfed printer reported a problem with drying times using recycled content paper (see section 5.5). Although only one printing company drew the consultant's attention to inconvenience associated with drying, it is important that the trials in Phase Two are designed to investigate the validity of this concern.

The consultants believe the best immediate opportunities in terms of technical feasibility are in the heatset, web offset market. There are a number of papers available for this sector. The consultants estimate that in the B2B sector there are approximately 17,000t of web offset product for which a medium proportion of titles may be particularly able to make use of recycled content papers.

Magazines within these categories have a wide range of circulation volume and a diverse target audience. Some titles are already printed on recycled papers. Using this as a benchmark together with providing conclusive print trial evidence to support it, should provide the catalyst for increased use within the sector. It is not necessarily the case that all of the magazines in these categories will be suitable for recycled content, but good case studies and trials will be identifiable for further investigation within these categories.

These figures have been calculated from available circulation data (ABC figures) which do not include circulation data for local authority and other government magazines. These publications, some of which will also be printed by web offset, may also be appropriate for using recycled content papers. Government recycling targets provide an additional driver for this market and these could provide valuable case study/trial material. These publications conform to all the usual production criteria for commercial magazines, but have the added benefit that there is usually no publisher intervention, low key advertiser involvement and no cover price. Therefore this sector is a low risk for print trials and has no obvious reason for not increasing its use of recycled papers. However, the factors that make case studies and trials easier in this area are also likely to reduce the perceived strength of them. The main barriers to increasing the use of recycled paper in this sector will be lack of awareness and insufficient technical information to specify recycled brands.

Although potential market sectors have been identified, the results of the trials will dictate the sectors and titles that will be most applicable to increase general usage. Comprehensive trials will consider and highlight all technical aspects - possible examples being UV varnishing, sealing, laminating etc. All these areas need to have trials conducted and the resulting data will provide a clear indication as to the magazine sectors that should be targeted in a campaign to raise awareness and subsequently increase usage.

In addition to web offset, there may be opportunities in the sheetfed and gravure sectors but these may prove to be more technically challenging and higher risk. The sheetfed sector represents >30% of the consumer magazine market and should not be overlooked. For gravure, which represents only a small fraction of the UK magazine printing market, the top consumer titles could be appropriate but the higher volumes would give a higher risk in terms of both tonnage and customer acceptance. However, in view of the recent investment in UK gravure and the projected growth of the UK's gravure printed magazine output, this area should be considered as suitable for a practical trial.

Considering the range of recycled content papers available, the high-end glossy lifestyle magazines do not have suitable recycled content papers for consideration at this time although this situation may change in the future.

5.7.5 Papers Available for these Sectors

The total recycled content material available (for all applications using these grades, not just magazines) is equivalent to 5,000,000 tonnes. It is estimated that this includes 2.7 million (+/-200,000t) tonnes of recycled fibre, which equates to an overall average recycled fibre content of 54%. If recycled content paper was used throughout all the magazine titles in the identified categories, this would represent 3-4% of the paper currently being produced by European mills. It is evident that there is increasing investment by mills in recycling technology and that not all European mills are working to maximum capacity in the production of magazine grade papers. This would indicate that there are no significant barriers to hinder the increased use of recycled content paper from production capacity or availability.

The case studies and practical print trials of Phase Two of this project should focus on a comprehensive coverage of the most widely used magazine grade papers and print processes. This will create a balanced view of the market and should provide both practical and technical information across a range of differing criteria. Figure 12 shows the relationship of the papers that should be used in the case studies, and how they provide significant coverage of the magazine papers currently in use.

5.8 Public relations opportunities

The opportunities for increased procurement of recycled content paper lie in businesses keen to convey a particular message and champion the use and continual development of the product. There are now recycled grades available, which certainly meet all the production and financial criteria for individual magazine sectors. This viewpoint is also consistent with feedback from leading magazine printers.

Advertisers and Advertising Agencies

Research for this project has not identified any pressure being applied by advertisers, on publishers, to change the paper on which their advertisements are printed. But this should not be translated as a lack of awareness or involvement by advertisers and agencies. It is more to do with direction of effort.

There is evidence of a growing interest in all matters that come under the broad heading of Corporate Social Responsibility (CSR) of which environmental issues represent a third, the other two being social and economic. Global business is under pressure from governments as well as campaigners. The European Association of Communication Agencies (EACA), under the general heading of CSR, is encouraging their members to recognise the positive aspects of taking a proactive approach to CSR. Whereas in the past, poor CSR performance was, quite rightly, seen as a risk to corporate reputation and brand, now the message is being promulgated that good CSR performance can be a source of brand advantage.

Advertising agencies are asked to recognise that Society's values are moving away from a concentration on material prosperity to one increasingly highlighting quality of life. The Advertising and Communication Forum of the United Nations Environment Programme (UNEP), quoting their Executive Director Klaus Töpfer, point out that "Consumers are increasingly interested in the world that lies behind the product they buy. Apart from price and quality, they want to know how, where and by whom the product has been produced."

Whilst some advertisers have been developing campaigns that put across their corporate approach to environmental responsibility, the numbers worldwide are still very small. In these early days, agencies are in the process of learning new skills that relate to how best to communicate these issues and "grow brand value" in a new environment. The direction of their focus is towards their clients' products rather than towards the medium carrying the message e.g. magazines. When the loop is closed, or when the value of environmentally responsible attitudes to paper choice form part of the brand value equation, then one would expect pressure from agencies and their clients to become noticed by publishers. Of course publishers could carry the message forward to agencies buying space, if they felt that they had a commercial benefit that they could exploit.

Greater pressure is put on manufacturers to manage their supply chains in ever more environmentally responsible manner. As domestic and corporate recycling pressure increases, driven by landfill and global warming, it is anticipated that there will be pressure from advertisers for the magazine space they buy to be available on recycled paper. Advertising agencies are important to publishers in that they are responsible for buying space from the publishers on behalf of the advertisers. They are also the guardians of the reproduction quality of the campaigns for which they are agents. If the reproduction of an advertisement does not reach the expected standard they will demand either some form of financial recompense or a free insertion of the ad at a later date. If advertising agencies can be made to recognise the environmental value of using higher proportions of recycled fibre, and kudos for the choice of paper can be associated back to the advertiser, this would be a win-win situation for all concerned. The advertiser benefits by demonstrating their commitment to CSR, the advertising agency has secured an extra dimension of service for their client and the publisher has not only kept an advertiser satisfied but may also attract new advertisers for the same reason.

5.9 Environmental Non Governmental Organisations⁴

The World Wildlife Fund's (WWF) position on the use of recycled paper comes from recognition of the need to sustain the World's forests. They believe that the proliferation of magazine titles in recent years has been highly profitable but "at a cost to the Planet as a result of the demand for virgin wood pulp". In addition to citing the environmental cost of paper production they also include the printing and distribution, the impact of dealing with unwanted magazines by recycling, composting, burning, etc. They believe that a print buyer should be aware of all the recycled alternatives and be up-to-date with the latest technologies for obtaining the desired results from recycled papers. The view at WWF is that any human activity should consider and adopt the least invasive and harmful approach to production. Where paper for magazine production is concerned, the alternatives are recycled paper and wood pulp from sustainable and well-managed, husbanded sources. The WWF recognises that there are a number of different, national certification schemes across Europe but they choose to endorse the Forest Stewardship Council's. The WWF describes it as being properly policed, documented and an auditable source of wood.

In the international drive to persuade large users to buy paper "responsibly" environmental non-governmental organisations (ENGOS) such as the Printing Alternatives Promoting Environmental Responsibility (P.A.P.E.R.) in the USA are putting pressure on magazine publishers to increase the proportion of recycled fibre in the paper they choose. The pressure on magazine publishers to change from virgin fibre paper to that which contains recycled content is having some success. The president of Quarto Communications commented on the effect in the marketplace of magazine publishers' combined influence in encouraging new and environmentally sound

⁴ The views expressed in section 5.9 are those of the organisation/s quoted and do not necessarily reflect the views of WRAP, the consultants or the project Steering Committee.

paper choices. The Canadian Magazine Publishers Association (CMPA) and the British Columbia Association of Magazine Publishers (BCAMP), at an industry conference, launched the Coated Paper Eco Kit. This was developed jointly with Markets Initiative, an environmental non-profit making organisation focusing on preserving ancient and endangered forests, and is designed to promote the adoption and implementation of Eco-friendly paper and production practices by magazine publishers and printers.

5.10 Paper Prices and other costs

The cost of recycled content paper has traditionally been on a par with virgin stock for lower grades and general consensus suggests that the higher quality grades can differ in price between –5% to +5%. However, one respondent expressed the opinion that for a heavier weight, gloss coated RCF paper, which was similar to a “top grade woodfree”, the cost could be up to 20% more. However, the range of heavier weight coated recycled content papers has increased in the last 12 months. This increased range, some with lower levels of recycled content, has provided more price competition. Experience of other sectors purchasing these heavier grades suggests price parity with virgin papers is usually possible.

There is now a widely available range of paper brands, grades and weights containing various quantities of recycled fibre. The ever-increasing EU production capacity and availability should inevitably lead to a greater stability in the recycled market. In turn this should facilitate more competitive pricing, which has been one of the most significant barriers to increased use. If, as predicted by many observers, paper prices rise in the near future (due to rising production costs and poor profitability) this could be a major factor towards an increased and more sustained use of recycled grades. In an every increasingly competitive market, it remains to be seen whether publishers will sacrifice quality for cost, but at a point of purchasing re-evaluation, this has to be viewed as an opportunity for increased use of recycled brands.

Figure 10 – A merchant’s view of the comparative prices of potential equivalent papers.

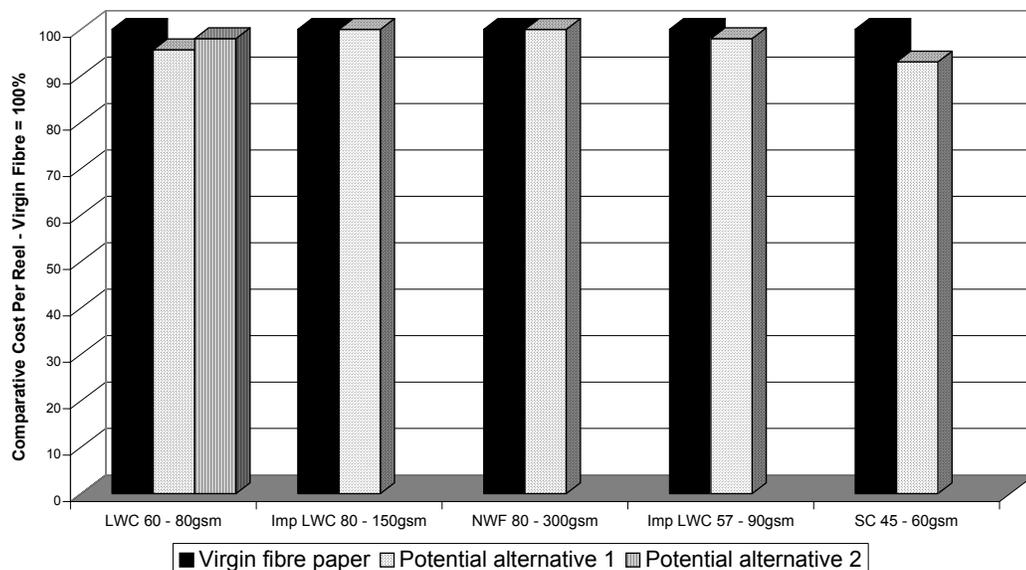


Figure 10 illustrates a merchant’s view of the comparative spot prices of virgin fibre paper compared against potential equivalents containing recycled fibre. Whilst the values from which Figure 10 has been prepared are intended for illustration only, they demonstrate that near equivalent papers with recycled content are available in the same, or very similar, price bracket to virgin fibre papers over a range of surface finishes and weights⁵.

Distribution Costs

It used to be the case, with recycled content papers, that there was a gap in the market when it came to LWC grades at lower GSM. The lack of availability of these grades forced publishers to look at purchasing higher grammage stock. This was comparatively more expensive than virgin stock and its properties of higher bulk resulted in increased cost for mailing and distribution. This consequently had an adverse impact on recycled paper being specified for direct mail and distribution criteria. As these costs can be the most significant part of the production cycle for publishers, this formed a barrier to the increased use of recycled paper grades.

⁵ NWF relates to near woodfree coated grades, these give the appearance of being brighter than conventional woodfree grades but still have a percentage of mechanical pulp that technically places them in the mechanical sector. They are significantly whiter than normal MWC grades.

Subsequently there has been a trend to increase the capacity and availability of recycled, lower weight, grades. The new machine and increased output of gloss, semi-matt and matt magazine grades from the Leipa Georg Leinfelder's Schwedt mill, mentioned earlier in this report, is one example.

Sensitivity of the publishers to the cost of distribution is only to be expected, as it is a highly visible, external cost, in the same way that prepress, printing and paper costs are closely scrutinised. The Royal Mail's Pricing in Proportion proposals, Royal Mail figures shown in Table 3, include changes to which magazine publishers, many of whom use the Royal Mail⁶ within their distribution chain, will be paying close attention. According to the Royal Mail, over 70% of mail will not change in price. The comparative costs of the two pricing structures are shown in Figure 11, where it can be seen that the cheaper band is between 200g and 450g after which it becomes more expensive up to a maximum weight for Large Letters of 750g.

Table 3 – Magazine distribution prices comparison, current and Pricing in Proportion (PIP)

Mag.	Circulation	Weight	Dimensions			Prices (pence)			
			Height	Width	Depth	Current Presstream 1	Current Presstream 2	Future (PIP) Presstream 1	Future (PIP) Presstream 2
A	100,000	290gm	300mm	230mm	5mm	42.2	40.6	37.8	30.5
B	100,000	235gm	300mm	230mm	5mm	36.9	35.8	32.9	26
C	100,000	235gm	300mm	230mm	7mm	36.9	35.8	32.9	26
D	100,000	580gm	300mm	230mm	10mm	68.6	64.5	73.4	62.7
E	100,000	470gm	300mm	230mm	10mm	58.6	55.4	59.9	50.5
F	100,000	470gm	300mm	230mm	14mm	58.6	55.4	59.9	50.5

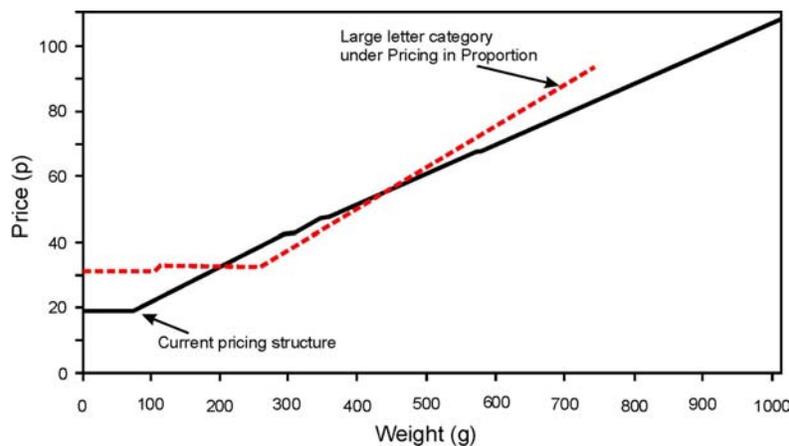
Please note:

- All items will fall into large letter format under PIP proposals
- All PIP prices are indicative
- Prices quoted are indicative basic straight-line with no profile price discounts included
- These prices are indicative and provided for the purpose of illustration only

Source: Royal Mail

The information in Table 3 was correct at the time of writing and is intended as a guide to the developing conditions. As these circumstances are evolving, readers are advised to seek current values directly from the source.

Figure 11 – Royal Mail's current pricing compared with PIP proposals. Source: Royal Mail



5.11 Impact on UK newsprint mills

Newsprint represents 18% of UK paper production with the three mills, Shotton, Aylesford and Bridgewater's combined output of 1,110,000 tonnes. Most of that newsprint is used domestically with a smaller proportion exported. The UK's annual consumption of newsprint is 2,540,000 tonnes.⁷

Currently unsold and post-consumer magazines can make up approximately 11% of a newsprint mill's fibre furnish. Today, just 2% of the paper within this portion of the furnish has a recycled content. Each newsprint

⁶ Customer magazines for retail outlets, airlines, etc. are exceptions to this.

⁷ Data source – CPI's Industry Statistics issued April 2005

mill will have typical operating windows within which they function, considering the furnish mix entering the process.

Increased recycled content within the magazine furnish will have a greater or lesser effect on newspaper production. The effect of this will be considered in some detail in Phase 2.

5.12 Other comments

1. With a better understanding of the fact that there are few technical disadvantages and in some instances positive advantages, as indicated by this report, more publishers will/may actively select paper grades with recycled content.
2. It is Leipa's intention to make no differentiation between LWC grades whether they are of recycled or virgin stock origin. They are aiming for a standard product and price irrespective of the fibre content. Citing the example of newsprint, Martin Doktor⁸ pointed out that in the early days of using recycled fibre in newsprint many questions and concerns were raised by the end-users about quality and runnability. The current accepted situation is that newsprint is manufactured with recycled fibre and it is the performance of the paper that is judged not the fibre mix. Leipa makes no price distinction between virgin fibre or recycled fibre LWC with the intention that the end user should just order LWC and Leipa will decide on the appropriate proportions of the fibre mix. Like newsprint is now, Leipa believes that recycled or virgin should not be a purchasing concern for their LWC grades.
3. It is important to recognise that image quality in printing is a product of complex interactions between the printing press, the paper, the inks and the image carrier (plates, cylinders, etc.). It is, therefore likely that when changing from one paper to another, some changes should be anticipated. For example a change to the total halftone coverage recommended or perhaps an ink formulation change to enhance drying.
4. With the commissioning of two gravure print sites in the UK catering for the magazine market (Polestar Sheffield 2005 and Prinovis Liverpool 2006) in combination with recycled content LWC now being available for gravure, the opportunity to grow the total consumption of recycled fibre for the future is expanded significantly.
5. Magazine publishing is amongst the most influential of all industries. Few other industries can demonstrate similar impact on the decisions of industry, governments, and all the demographic divisions of the population. Raising awareness of the supply chain's environmental impact and implementing systems to manage environmental performance will be a challenge for many publishers. At stake are brand identity, shareholder value and regulatory risk. However, as consumers and advertisers become more aware of environmental issues, publishers, because their products are capable of wielding powerful influence, are well placed to respond to, and benefit from, the new priorities. There is mounting evidence, from global multinationals, that it is possible to save money and grow markets when environmentally sensitive supply chain management is embraced enthusiastically.
6. Whilst archival longevity is not usually a high priority for magazine publishers, some professional archivists have expressed concerns about the influence of secondary fibre in printing and writing papers. However, research carried out in Spain has shown that recycled papers have a lifetime very similar to papers made from virgin fibre. None of the papers studied was classified below minimal duration (50 years). Out of seven samples, four containing recycled fibre showed a minimal duration of several centuries, which was the same as the sample manufactured from virgin fibre⁹.

6 Phase Two

6.1 Impact on UK newsprint mills

Shotton, Aylesford and Bridgewater are the three UK newsprint mills and between them they supply 44% of the UK's newsprint consumption. Recovered magazine grade papers represent significant raw material input for them. Currently, newsprint furnish from magazines (LWC papers) contains a substantial proportion of virgin fibre and this confers beneficial properties on the final sheet. It is necessary for Phase Two of this project to understand the impact that increased use of recycled content magazine grade papers might have on UK

⁸ Interview with Martin Doktor MD of Leipa UK

⁹ "Durability of Recycled Printing and Writing Paper", J Soler, J A García, A L Torres, T Vidal and J F Colom, Progress in Paper Recycling, pp 20 – 28, November 2000

newsprint properties and production. As the proportion of recycled fibre in magazine paper increases so, by definition, the amount of single cycle virgin fibre available in the newsprint furnish will diminish.

As part of Phase 2, it is required that these potential impacts are ascertained and confirmed with the leading UK newsprint mills. In order to do this, the proportion of furnish made up of magazine papers currently used (or likely to be used in the future) by each of the main UK newsprint mills should be established. Alternative scenarios for increased recycled content of this furnish should then be developed. It should then be established through interviews and simple quantitative analysis whether or not the increased proportion of recycled fibre within the furnish in each scenario is within the normal tolerances of the mills. It is also important that the influence of the furnish change on sludge production needs to be assessed.

Other factors regarding the performance of the newsprint need to be interpreted at the machine/process, sheet level. These include the sheet quality and machine runnability factors such as:

- Speed
- Drainage/retention
- Strength
- Brightness
- Drying energy
- Opacity

Potential impacts on the newsprint's printability should also be considered, possibly using a series of tests such as:

- Tests for Absorption
- IGT or Prufbau surface pick
- IGT stain length (ink demand)
- Tone transfer characteristics and colour gamut
- Press runnability e.g. tensile and tear resistance and dimensional stability

6.2 Print trials

6.2.1 Introduction

There are printers in the UK and the rest of Europe working successfully with paper with recycled content, but there are real opportunities to increase its use in the UK magazine market.

In general terms, the project has identified that from a heatset web offset printer's perspective there are no major technical reasons why they should not use more paper containing recycled fibre. However publishers need more confirmation that recycled grades are "fit for purpose". Principally this encompasses cost, availability of suitable weights and reel sizes for trials, and issues of quality perception. For consumption of recycled fibre to increase there needs to be heightened awareness of the quality and availability of recycled papers.

The purpose of trials is to collect information that can be used to effect a culture change. Trials are needed to enable the case to be proven from both a technical and scientific perspective to allay any misconceptions or fears attributable to performance on press. Technical or quality issues arising can be evaluated and categorised appropriately. Because risks and issues identified may only be applicable to the quality criteria in certain market sectors, real data should be widely available rather than the generalised view currently circulating that we suspect is responsible for creating some negative effects amongst publishers.

Print trials, and the resulting data collection, will give publishers and printers the necessary information and confidence to specify the use of papers with recycled content. The consumer magazine market is ideal for print trials because it provides a comprehensive cross section of titles, print processes, target audiences and possibilities for increased awareness and feedback. There are a variety of virgin fibre papers currently being used that could be substituted with recycled content paper with similar properties of bulk, weight and opacity. Due to the size and nature of this market the possibility exists to raise awareness universally but exercise a controlled and monitored increase in the use of recycled content papers.

6.2.2 Market sector

The first phase of this project has already identified that there are a number of magazine types that have trialled recycled LWC. Phase One has also indicated what type of magazines would most readily be able to use recycled paper grades, however, further results will be generated by Phase Two that will identify clearly advantages and disadvantages of making the change.

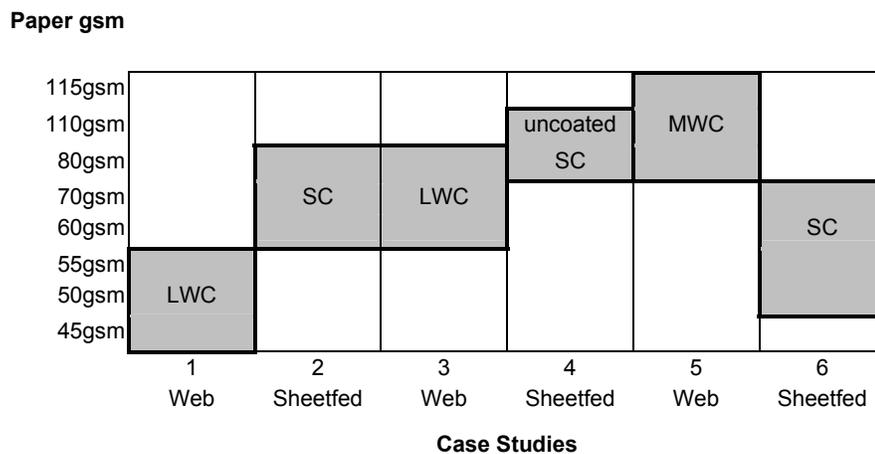
Phase One has shown that the factors that are important to consider do not just centre on the printing press, but focus on brand perception through quality loss, increased paper and/or distribution costs and possible lack of suitable paper grammages. The trials should provide information from which a risk analysis can be performed

which means data collection and analysis should be undertaken from the point of magazine design and marketing, through the publisher’s production routes, out to the printer and through distribution and sales to the consumer.

6.3 Proposed Case Studies

All of the case studies proposed below should provide a perspective on the issues relating to their choice of recycled paper, comparison data between recycled and virgin, and map their progress from start to current situation. They should highlight the decision making process followed for choosing to use recycled paper and discuss issues surrounding corporate social responsibility and the environment if this was part of the decision process. It should be possible, from the case study reports, to understand any impact there had been on the attitude of advertisers, advertising rates and if there had been any feedback regarding perceptions of quality change. Information from their respective printing companies should be collated in a search for similarities or differences that can help to illustrate the full exploitation of benefits that these options provide. Figure 12 highlights the various grades of paper that should be considered in the case studies.

Figure 12 – Proposed Paper Grade Usage for Case Studies



A newspaper supplement case study should also be included, even though the likely paper grade is already covered by the six studies in Figure 12, because their existing experience and the tonnage they represent should be part of the wider consideration. This is described in Case Study Seven below.

6.3.1 Case Study One – An example of a magazine with substantial experience of using recycled content paper

For this case study it is proposed that a magazine with an established record of printing on paper with recycled content be chosen. For a weekly magazine three months will be considered sufficient, for a monthly magazine six months experience is considered necessary. It can be either Consumer or B2B but should have a strong circulation. The chosen case study should be printed by heatset web offset on a 45-55 gsm recycled LWC paper.

6.3.2 Case Study Two – Membership Based Organisation or High Profile ENGO’s magazine

In the case of an ENGO it is anticipated that the subject matter and target audience would have a natural affinity for a recycled product. However, technical and commercial constraints may still provide useful feedback for other types of magazines contemplating the benefits of changing from virgin fibre based paper. This example should be printed by sheetfed offset on a 60-80g uncoated SC paper.

6.3.3 Case Study Three – High Volume Consumer Magazine

It is intended that this case study should investigate a high volume consumer magazine where the production values are not influenced by the choice of paper. Where, perhaps, the paper choice is based on cost rather than specific, physical characteristics. This example should be printed by heatset web offset on a 60-80g LWC paper

6.3.4 Case Study Four – Local or Regional Magazine

It should be possible through a county magazine to investigate any issues relating to consumer feedback and perception of product quality. The identified magazine title is likely to be printed by sheetfed offset on a 80-100 gsm uncoated stock.

6.3.5 Case Study Five – Customer Magazine

An investigation of a large retailer's customer magazine should provide an insight into the drivers for adopting recycled paper in a highly competitive, hi-tech, quality, marketing driven sector and how this is reflected in their total environmental policies. This case study should be printed by heatset web offset on a 80-115 gsm MWC paper.

6.3.6 Case Study Six – B2B printed by Sheetfed Offset Lithography

The generally held opinion of B2B magazines is that their titles will be more content focussed than image led and so they will be less sensitive to a paper change. However, it is anticipated that with the right paper quality/price combination their advertisers would appreciate the use of paper with recycled content as much as any other magazine sector. With the right choice of case study, the accuracy of this opinion can be ascertained along with any technical considerations that may be specific to sheetfed printing. This example should be printed by sheetfed offset on a 50-70 gsm SC paper.

6.3.7 Case Study Seven – Newspaper supplements (broadsheet and tabloid)

The production decisions for newspaper supplements are very similar to those for many consumer magazines. In some instances where newspaper supplements are printed on recycled content papers there is potential for the magazine publishing sector and for other newspaper supplement publishers to learn from the existing experience. This case study should include supplement examples from both the broadsheet and the tabloid newspapers, where different content and readership are targeted. The papers to be considered are likely to be LWC for the broadsheet supplement, and possibly MFC for the tabloid supplement. The print process is likely to be gravure, or possibly web offset.

6.4 Practical Printing Trials / Case Studies

Where appropriate case studies are not readily available then practical printing trials are an alternative. The practical printing trials must identify printers that, where practicable, have their own in-house stitching, binding, inline UV and distribution (possibly mailing) facilities. With the full range of production and finishing facilities in-house, it would be very much simpler to manage the print trials making them both practical and, in workflow terms, comprehensive. By the time phase 2 starts some of the following print trials listed may be in regular production and therefore treated as case studies instead. During the tendering process for Phase Two, budgets for all of the trials presented below should be submitted to enable WRAP to decide which should be developed further.

6.4.1 Trial One – B2B Sheetfed

This example should have a print run in the region of 10,000 to 15,000 copies. It is expected to have a healthy subscription in combination with some newsstand distribution. It will carry both classified and display advertising and although it may not have colour all through, colour will be important to some of the content and some of the advertisers.

6.4.2 Trial Two – Consumer Heatset Web Offset

This trial should be a monthly magazine with a print run of 50,000 copies. It should consist of more than one section and would, ideally include cover mounting, stuffing or varnishing or other finishing or handling processes that may be complicated by a paper change.

6.4.3 Trial Three – Children's Magazine, Heatset Web Offset

This print trial should be a monthly magazine title with a print run of 50,000 copies. It should consist of 2x16pp sections or 1x32pp section printed on an LWC paper. It should be full colour throughout having high ink coverage with limited advertising content. It should include standard finishing processes and the possibility for inserting and cover mounting.

6.4.4 Trial Four – Local Government / Regional Development Magazine, Heatset Web Offset or Sheetfed Offset

This trial should be a weekly/monthly publication with a print run of 25,000 – 75,000 copies and consisting of more than 1 section ideally printed on an MWC paper. The content should be predominantly full colour with a mix of high quality images and display advertising. Ideally it will have the standard finishing processes and distribution will be a mixture of mailing and direct distribution.

6.4.5 Trial Five – Gravure-printed consumer magazine

Although gravure currently represents only a small proportion of UK magazine production (less than 2%), developments and capital investments by Polestar and Prinovis are likely to contribute to an increase in importance in gravure in the near to mid-term. In addition, efforts still continue to improve the performance of recycled content papers available for gravure printing. This case study should test the current situation by investigating the potential to produce high volume (circulation 500,000-600,000) consumer titles on recycled content papers targeted at the gravure sector. In doing so, the design of the trials and presentation of results should take into consideration that this is a developing field.

6.4.6 Trial Six – Newspaper supplements (broadsheet)

Although some broadsheet newspaper supplements successfully use recycled content paper (for example, the Guardian's Weekend supplement), a significant proportion are produced on virgin LWC grades. This trial should seek to demonstrate the possibilities of using recycled LWC grades to produce high gloss broadsheet weekend supplements using gravure or web offset printing.

6.5 Anticipated work programme for Phase Two

6.5.1 Print Trial design

Print trials need to produce results that can overcome the printing client's/publishers' understandable commercial reluctance to experiment. Such trials should demonstrate that print quality, and the quality of the reading experience, have not been influenced negatively.

The option of printing different sections of the same magazine both on virgin and recycled paper has been discounted. The human visual system is an excellent comparator (i.e. when two samples are presented side-by-side, the eye is extremely sensitive to minute differences). However, when judging a single sample the eye has a remarkable ability to adapt, particularly to differences in brightness. The relevance of these capabilities to this project is that once a magazine has been purchased, the general consumer never makes a direct comparison whilst reading it. Comparison may take place on the newsstand but that will be primarily between covers rather than inner pages. Weight, stiffness, smoothness and gloss will all contribute more subliminally to a consumer's level of satisfaction with a printed product, and are important things to consider when choosing an alternative paper, but direct visual comparison between virgin stock and recycled stock may result in a misleading conclusion of unsuitability. Whilst recognising that appearance is crucial to success, it should be understood that judging appearance in isolation may be more meaningful than direct comparison.

An individual section of a magazine is not appropriate for the reasons outlined above as such it is proposed that Print trials cover a full issue.

It is likely that a number of trials will be undertaken covering the processes described 6.4.1-6.4.6. For each of these trials it is proposed that they are broken into the following stages. The numbers indicate the chronological order of the stages in which the trials will be conducted. They are:

1. Selection of magazine within one of the market sectors identified as being particularly appropriate for recycled content papers and one that will have maximum impact with the minimum risk. Both heatset web offset and sheetfed technology should be trialled, though at this stage, the limitations of the immediate opportunities for gravure in the UK gives that technology a lower priority for Phase Two. However, gravure should be reappraised in the future.
2. Within the chosen market sector, partnerships with publisher/s and printer/s should be arranged and agreements about responsibilities prepared. These responsibilities will include:
 - Procedures for selecting a suitable paper
 - Analysis of risk associated with the print run
 - Selection of printing company
 - Selection of paper supplier
 - Preparation of content and identification of any necessary prepress adjustments in anticipation of printing differences

A suitable title or titles can then be chosen and the practical arrangements regarding content, workflow procedures and deadlines agreed.

3. Agree the options, with the printing company, for monitoring the print run and identify critical workflow points;
 - Proofing is a critical workflow point if the magazine carries process colour advertising, high quality reproductions or if the cover is to move to a recycled stock as well as the inner pages. It will be important to reassure the agencies concerned that the print/paper combination will reproduce their illustrations correctly. This means that evidence must be sought that the tone transfer characteristics of the new printing condition will fall within the parameters of the proofing processes used by the advertising agencies.

If the choice of magazine for the printing trials demands accurate proofing then a pre-trial "fingerprinting" or "profiling" exercise, to identify the tone transfer characteristics, will need to be undertaken. This would require a test target to be printed on the chosen paper during a print run that closely emulated normal production conditions. The test target can then be measured and a suitable proofing profile calculated. We do not believe that the success of the print trials is dependent on this level of analysis and can be avoided with the correct choice of sample magazine. However, if high quality advertising is considered essential to the success of the project then some form of analysis to determine how closely the new printing condition conforms to standard values will be necessary.

- The print trial will be judged over two major categories, how the paper performs through the press and the quality of the product produced. It is anticipated that the opportunity to modify the content of the trial magazines will be limited. The principal gains of the trial will come from comparing makeready¹⁰, downtime, blanket washes, plate changes, ink consumption, folding and other aspects of running at full production speeds against known data for the same category of work on virgin fibre papers taken from the printing company's records. A qualified observer will have to witness the trial run and compare their observations with the printer's records of the same process. Details of press settings and running adjustments that were caused by the paper will be recorded. It is to be hoped that the printer will have records of previous runs so that meaningful comparisons can be made. The presence of such records will be a factor in deciding which printer (and magazine title) should be chosen for the trial.

An assessment of print quality can be made by judging the appearance of the trial sample compared with an agreed control – a sample viewed under controlled lighting conditions of what the publisher considers to be a first class example of the trial category of work. However, opinions about final quality will be collected from a variety of sources including the printer, the independent, qualified observer, the publisher and a panel representing the end consumer. If feasible, feedback from actual readers will also be sought.

- Gathering, binding and finishing are critical parts of the printing workflow and the print trial needs to provide evidence of the mechanical handling properties of the paper used. The choice of title will determine the binding method and also whether stuffing or cover mounting become issues. Wear of knife trimmers may be an issue if the recycled paper is more abrasive. As the finished magazines are flow wrapped for despatch any distortion may cause disruption of the process. The methods for assessing the influence of the paper will be virtually identical as to those used for the printing process, that is observation and comparison with previous runs.
4. Evaluate the paper options and test the alternatives. It will be possible to put numeric values to many of the technical characteristics of the papers under consideration. They include: pick strength, oil absorbency, opacity, smoothness, porosity, strength (tensile, tear, and burst) and rub resistance. Not all the characteristics mentioned here may be needed, the most appropriate test will be determined by the magazine category, the printing process and the combined concerns of the paper suppliers, the printing company, the publisher and the print and paper technologists.
 5. The selection of the paper to be used for the trial will be decided by discussion between the publisher, the project team and the printer.
 6. Print – monitored production run that will include live data collection of the press performance including all the quality and efficiency elements listed under paragraph three of this programme.
 7. Evaluate the result. It is proposed that during the evaluation process, feedback from all parties concerned, including the consumer, should be considered. Whereas much of the data can be collected by the project team as the trials progress, feedback from the end consumer may be more difficult to collect and may well play an important part in the choice of suitable categories to trial.

¹⁰ Makeready is the term that defines the operations, time and consumables used prior to producing saleable work.

It is anticipated that the primary concern of the printer will be runnability followed by consistency of print quality, however, the publisher's principal concern will be cost, followed by the maintenance of the perceived value of the finished product. It is anticipated that the consumer will be concerned with stability of perceived quality (for a regularly purchased periodical) and value for money.

7 Appendix One - Glossary

Bulk or volume	The bulk of paper refers to its specific volume per unit mass e.g. cm ³ /g. High bulk/volume ratio generally offers greater stiffness.
Coated fine papers	Fine papers are based on bleached chemical pulp. They may be coated once, twice or three times and their surfaces can be matt, silk or glossy.
Coated Mechanicals	Coated Mechanical Reels (CMR) is split into two sub-categories - Lightweight Coated (LWC) and Medium Weight Coated (MWC). These papers can have either a glossy or matt finish, and are used mostly for catalogues, magazines and advertising material using rotogravure or offset printing. They are made from a blend of chemical and mechanical pulp with a content of fillers and are mineral coated on both sides, either on or off machine. LWC has a basis weight of up to 72 gsm and anything above 72 gsm is classed as either MWC or Heavy Weight Coated (HWC). ¹¹
Density	The density of paper refers to its specific weight per unit volume.
MFC (machine-finished coated)	Based on mechanical pulp, the bulk of machine-finished coated magazine paper is generally high. Its matt surface and high brightness provides good readability and absorbs little ink.
Newsprint	Newsprint is an uncoated paper that is mainly used for printing newspapers. In the past, it has been made largely from mechanical pulp. But today, an increasing amount of recovered paper, mainly old newspapers (ONP) and old magazines (OMG), also goes into the production. The weight of a sheet of newsprint usually ranges from 40 gsm to 52 gsm, but can be as high as 65 gsm. Newsprint is white or slightly coloured (eg, pink Financial Times), and is supplied in reels for rotogravure, offset or flexo printing ¹¹ .
Opacity	Opacity is a measure of the amount of light than can pass through the paper. The higher the opacity the lower the amount of light that can pass through. Using paper with high opacity means that printing on the back of the page cannot be seen from the front.
Printability	Printability is an expression that relates to the properties of paper that affect print quality. It is influenced by the combined interactions of the paper, the printing ink and the printing press.
Runnability	Good runnability means the paper will exhibit high production efficiency during the printing process with a minimum of breaks, jams or misfeeds. Also runnability implies no reduction in speed to maintain image quality and no stoppages for wash-ups or removal of debris.
SC (supercalendered)	Supercalendered paper is the most economical uncoated magazine paper in terms of information capacity and cost. SC grades, with a matt or glossy finish, are made for rotogravure and offset lithography printing
Substance (gsm)	The weight of a defined area of a sheet of paper that is normally expressed as grams per square metre. This is written as gsm or g/m ²
Uncoated fine papers	These papers are "machine-finished" papers based on bleached chemical pulps. The surface characteristics (smoothing and glazing) of the paper are determined by processes such as surface sizing, calendering and supercalendering rather than by the application of an additional layer of pigmented coating.
Uncoated Mechanical Improved (UMI) or Improved Newsprint for offset printing	Uncoated Mechanical Improved (UMI) contains different grades of machine-finished paper of a higher brightness than is included in Newsprint. The basic furnish is the same as for newsprint and the basis weight starts at 40 gsm. The grade is split into two sub-categories based on brightness - high-bright and super-bright ¹¹ .

¹¹ Definitions from the Association of European Publication Paper Producers

8 Appendix Two

Magazine papers with recycled fibre content

Table 4 - range of recycled paper grades/gsm that are currently available

Manufacturer/ Merchant	Brand	Web / sheet / gravure	Grammage	LWC / SC etc	Recycled Content %	Brightness %	Opacity	Gloss
Burgo Cartiere	9 lives 55 gloss/silk		100-350		55			
Burgo Cartiere	9 lives 80 gloss/silk		100-350		80	96-97	93-98	
Burgo Cartiere	Uno Light		51-80		100	71.5-77	91.5-95	37.5-38
Dalum Papir	Cyclus Offset		70-250		100	81-84	92-98	
Dalum Papir	Cyclus Print		70-200		100	82-84	93-98	12-19
Dalum Papir	RePrint		70-200		50	90	91-98	12-19
Howard Smith Paper	Greencoat gloss		100-350		80	96	93-99	69-76
Leipa	Ultra Mag semi gloss		51-65		100	76	91-92	40
Leipa	Ultra Mag gloss		51-65		100	76	91-92	54
Leipa	Ultra Lux silk		60-80		100	82-88	92-94	
Leipa	Ultra Lux semigloss		60-80		100	82-88	92-94	>35
Matussiere et Forest SA	VGreen		65-130		100			
M-real	Zanders Mega Gloss		90-350		50	95.5	91.5-97.5	
M-real	Zanders Mega Matt		90-350		<50	95.5	93.3-98	
Myllykoski	LP-HO (SC-B)		45-55		85	66-67	90-93	30
Myllykoski	Alpa Classic Gloss LWC/MWC		57-80		10	77	90-95	52-55
Norske Skog (UK)	Norcote Bruck H		57-80		<25	75-76	90-95	53-61
Norske Skog (UK)	Norcote Silk H		57-90		<25	86-88	91-95	
Paperback	Corona matt/gloss		60-90		100	74-85	94	
Paperback	Corona offset		70-300		100	98	92	
Paperback	Maple matt		65-150		100	81	94	
Paperback	Recyconomic coated		60-90		100	78	95	
Paperback	Sylvan coat		65-120		100	84	92	
Paperback	Emerald FSC		90-350		75	89	94	

Manufacturer/ Merchant	Brand	Web / sheet / gravure	Grammage	LWC / SC etc	Recycled Content %	Brightness %	Opacity	Gloss
Paperback	Sylvan offset		60-120		100	80	94	
Robert Horne	Revive Lite gloss/matt		51-70		100			
SCA Graphic Laakirchen	GraphoPrestige		51-57		"large %"	80	90-92	46-48
SCA Graphic Laakirchen	GraphoGrande		48-60		"large %"	73	90-93	45-48
SCA Graphic Laakirchen	GraphoSet		52-60		"large %"	68	87-94	43-47
SCA Graphic Laakirchen	GraphoGravure		45-60		"large %"	68	88-93.5	45-48
Steinbeis	Signaset colour		50-170		100			
Steinbeis	Character brilliant		54-115		100	78	93-99	
Steinbeis	Character bulky		54-80		100	76	93-99	
Steinbeis	Character silk		54-115		100	78	93-99	
UPM	Eco/Eco S		45-60		100	65-68	91-96	
UPM	Eco/Eco G		45-60		80-100			
UPM	Eco/Eco H		45-60		80-100			

Please note:

1) A range of magazine grade papers containing recycled fibre is summarised in Table 4, this excludes "improved newsprint" types as used in puzzle and crossword magazines. Table 4 has been compiled from readily available information from the suppliers' Web Sites and other published sources. As technical specifications are subject to change these values should be taken as indications only. Current values should be sourced directly from the manufacturers or merchants.

2) This list is not exhaustive and is only intended to give an indication of the range of recycled papers available.

9 Appendix Three

Magazine sector data

B2B Magazines

Table 5 – B2B Circulation Summary

Copy Volume / 1000	Title percentage
0 – 5	15%
5 – 10	40%
10 – 20	20%
20 – 100	20%
100 +	5%

The volume breakdown into print market share equates to:
 Sheetfed Offset 65% Web offset 35% Gravure 0%

Table 6 – B2B Production Values

Magazine Sectors	*Annualised Total Circulation	Title no & volume/issue (1000)				
		0-25	25-50	50-100	100-250	250 +
General Interest	7,635,408	39	3	1	-	-
Industrial/Hardware	10,338,672	44	7	2	-	-
Medical	18,564,828	28	9	4	2	1
Public Sector/Services	37,580,430	69	14	8	2	1
Food / Drink	5,827,584	41	4	-	-	-
Travel/transport	5,589,792	40	3	-	-	-
Agriculture/forestry	4,992,384	27	2	4		
Business/legal	36,589,416	115	28	7	6	-
TV/Audio/entertainment	3,653,208	13	1	-	1	
Sport/leisure	527,088	4	-	2	-	-
Communications	96,645,036	79	6	3	1	-
Fashion/furnishings/textiles	5,320,680	38	-	-	-	-
Total	233,464,524					

*Source: Estimation of titles and volumes from ABC figures

KEY	Sheetfed Offset
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The highlighted areas indicate the print process applicable for the highest number of individual titles in that particular magazine sector.

Table 7 – B2B Tonnage

Magazine Sectors	*Annualised Total Tonnage	Average Tonnage/issue				
		0-25	25-50	50-100	100-250	250 +
General Interest	2,313	146	30	22	-	-
Industrial/Hardware	3,132	165	79	45	-	-
Medical	5,625	105	101	90	105	150
Public Sector/Services	11,388	259	157	180	105	150
Food / Drink	1,765	154	45	-	-	-
Travel/transport	1,693	150	30	-	-	-
Agriculture/forestry	1,512	101	2	90		
Business/legal	11,087	431	22	157	315	-
TV/Audio/entertainment	1,107	49	11	-	52	
Sport/leisure	159	15	-	45	-	-
Communications	29,286	296	67	67	52	-
Fashion/furnishings/textiles	1,612	142	-	-	-	-
Total	70,679	2,013	544	696	629	300

*Source: Estimation of titles and volumes from ABC figures

The Tonnage calculations are based on an average of the production figure and an average magazine weight of 300g per copy.

The tonnage breakdown into print market share equates to:

Sheetfed Offset 45,941 t Web offset 24,737 t Gravure 0 t

Consumer Magazines

There are 736 recorded publications in this sector. They fall predominately into the web offset market, but there is also significant coverage within the Sheetfed sector.

Table 8 – Consumer Magazine Circulation Summary

Copy Volume / 1000	Title percentage
0 – 25	34%
25 – 50	25%
50 – 100	19%
100 – 250	16%
250 +	6%

The title breakdown into print market share equates to:

Sheetfed Offset 25% Web offset 74% Gravure 1%

Table 9 – Consumer Magazine Production Values

Magazine Sectors	*Annualised Total Circulation	Title no & volume/issue (1000)				
		0-25	25-50	50-100	100-250	250 +
Buying & Selling	64,146,000	45	9	3	3	1
Teenage	29,813,000	1		5	5	3
Children's	84,534,000	3	14	16	9	1
Countryside & County	25,650,000	14	8	2	2	1
Gay & Lesbian	538,000		1			
General Interest	60,755,000	9	13	4	6	4
Humour	2,648,000		1			
News & Current Affairs	156,425,000	12	6	6	9	3
Music	24,279,000	8	8	4	4	
Puzzle	20,523,000			2	5	
Tourism	931,000			1	1	
TV Listings	371,136,000		1	3	3	3 + 4
Women's Interest	687,694,000	14	20	31	35	4 + 4
Computing	48,146,000	29	12	9	4	
Home Interest	18,647,000	8	6	3		2
Leisure Interests	92,072,000	40	29	15	5	4
Men's Lifestyle	53,389,000	1	2	7	5	2
Motoring	180,563,000	41	24	13	12	6
Sports	53,069,000	12	23	6	1	
Total	1,974,958,000					

*Source: ABC, adjusted for non-ABC titles and news trade unsolds

KEY	Sheetfed Offset	Web Offset	Gravure
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The highlighted areas indicate the print process applicable for the highest number of individual titles in that particular magazine sector.

Table 10 – Consumer Magazine Tonnage

Magazine Sectors	*Annual-ised Total Tonnage	Tonnage/issue				
		0-25	25-50	50-100	100-250	250 +
Buying & Selling	19,400	169	273	67	157	150
Teenage	9,000	4		112	262	450
Children's	25,600	11	157	360	472	150
Countryside & County	8,000	52	90	45	105	150
Gay & Lesbian	200		11			
General Interest	18,400	34	146	90	315	600
Humour	800		11			
News & Current Affairs	47,400	45	67	135	472	450
Music	7,400	30	90	90	210	
Puzzle	6,200			45	262	
Tourism	300			22	52	
TV Listings	112,500		11	67	157	1050
Women's Interest	208,400	52	225	697	1837	1200
Computing	14,600	109	135	202	210	
Home Interest	5,700	30	67	67		300
Leisure Interests	27,900	150	326	337	262	600
Men's Lifestyle	16,200	4	22	157	262	300
Motoring	54,700	153	270	292	630	900
Sports	16,100	45	259	135	52	
Total	598,800	888	2,160	2,920	5,717	6,300

*Source: ABC, adjusted for non-ABC titles and newstrade unsolds

The Tonnage calculations are based on an average of the production figure and an average magazine weight of 300g per copy.

The tonnage breakdown into print market share equates to:

Sheetfed Offset = 149,680 t Web offset = 443,055 t Gravure = 5,987 t

Appendix Four

WRAP leaflet - Is recycled paper environmentally better than virgin paper?

The comparison of virgin paper and recycled paper for environmental impact is complex and needs to consider the whole life from production of raw materials through to end disposal. In order to model this, a common and internationally accepted method is to use a life cycle analysis (LCA) approach. An LCA is a calculation of the environmental burden of a material, product or service during its lifetime.

The environmental impacts of the alternative systems are determined and compared. The impact categories typically used for the environmental assessment of paper systems are:

- Energy use (or generation)
- Resource consumption
- Global Warming
- Energy related impacts
- Toxicity (of emissions)
- Waste generation

These categories encompass all the common impact questions be they bleaching, energy use, transport of recovered paper and many others.

There have been many LCA studies undertaken across Europe in the last few years. In order to come to a more "definitive" view, the EU commissioned a report to consider the conclusions of a range of life cycle analysis report – "Review of existing LCA studies on the recycling and disposal of paper and cardboard".

See <http://waste.eionet.eu.int/publications/lca>

Full details on each of the impact areas is available via the main report. The alternative systems considered by the report are illustrated overleaf.

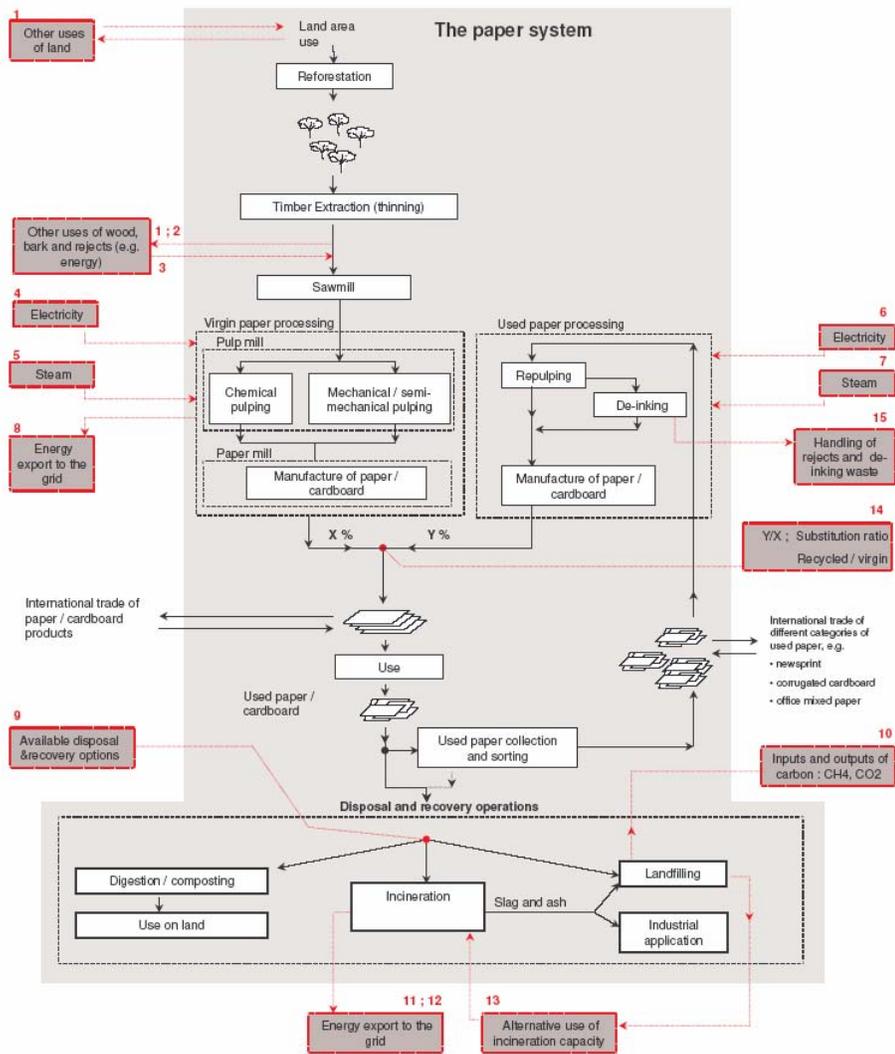
Conclusion

A key conclusion from this report was:

"The results of the 73 scenarios have been classified and presented as a function of the 15 key assumptions identified. The overall results of the LCA studies indicate that **recycling of waste paper has a lower environmental impact than the alternatives of landfilling or incineration**. The result is very clear in the comparison of recycling vs. landfilling, and less pronounced but still clear in the comparison of recycling vs. incineration".

Reference: Review of existing LCA studies on the recycling and disposal of paper and cardboard FINAL DRAFT REPORT 21 April 2004 by the European Topic Centre on Waste and Material Flows. Extract from Page 4. This study was conducted under commission of the Environment DG of the European Commission.

Alternative Paper Life cycle systems



Oct 05